The OIL WEEKLY

15¢ A COPY

Exclusively Devoted To The Production and Transportation of Oil and Gas

Engineering News Statistics

May 2, 1930 Volume 57. No. 7

The Hole Story

REAMER TYPE DISC BIT

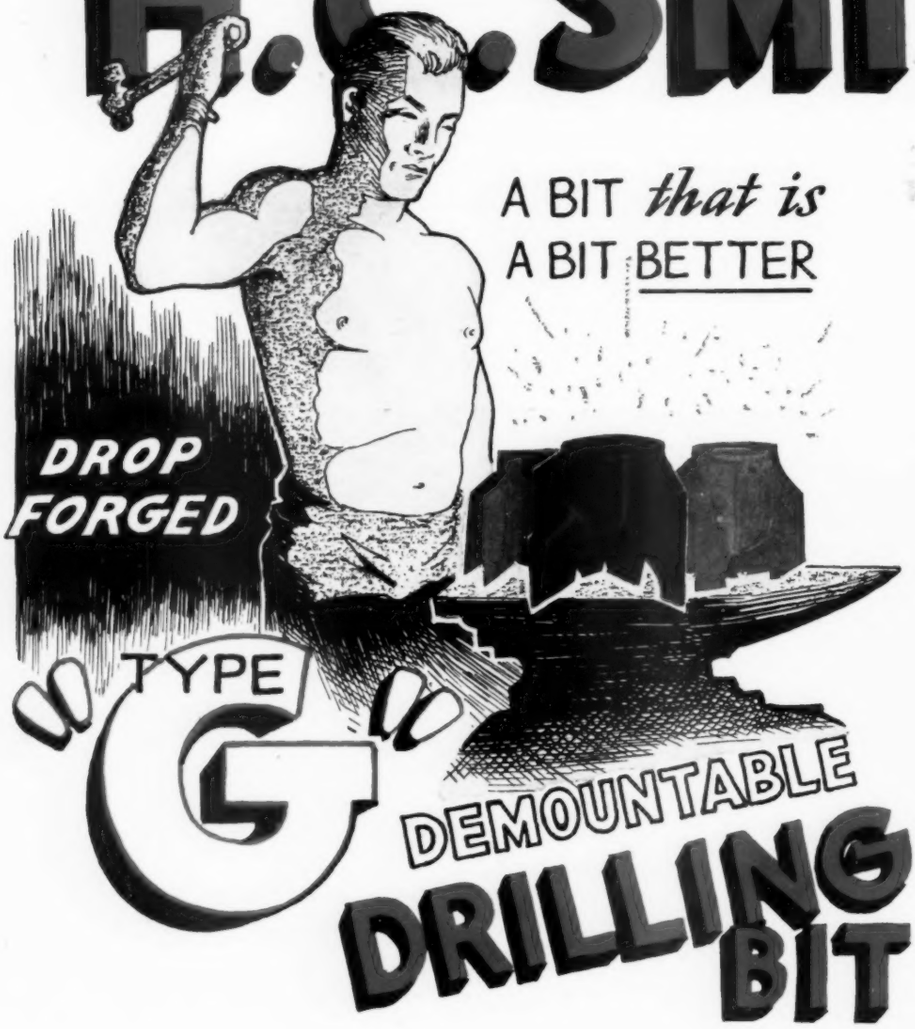
No tricks to learn — just hold the weight off and turn to the right! Not only digs Straight, Fast, Full Gauge Hole, but straightens a crooked one without plugging back, cementing or using a whipstock — and no after reaming.

of course it's a —

BJ

Byron Jackson Co.
ESTABLISHED 1872
Los Angeles, Cal.
Tulsa - Oklahoma City
Houston - Shreveport
New York City

H. C. SMITH



The H. C. Smith Type "G" Demountable Drilling Bit with Roller Reamer Body, embodies the newest features in drilling tools and is especially adapted to modern drilling requirements.

Drop-forged of special alloy steel of perfected design. Diamond metal set and hard surfaced by a new and improved method. Two point roller reamers steady bit in hole and eliminate the necessity of reaming down to get new bit on bottom. Can be run with either roller reamer body or plain body.

H. C. Smith Quality Tools have proved over and over again that they make faster hole and straighter hole and are the most economical to use. Type "G" Drilling Bit is a noteworthy addition to this line of famous hole makers—try it on your next job and you'll admit that Type "G" is a bit that is a bit better.

Write for detailed information on any or all H. C. Smith Quality Tools

H. C. SMITH MANUFACTURING CO., Inc.
DIVISION OF GLOBE OIL TOOL CO.
Los Nietos, California

Branch Offices and Warehouses:

Bakersfield Calif
Kettleman Hills, Calif.
Oklahoma City, Okla.
Ventura, Calif.
Taft, Calif.

Cable Address: "Smithco, Whittier"

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All the Oil World Encores the Performance of Gaso Pumps

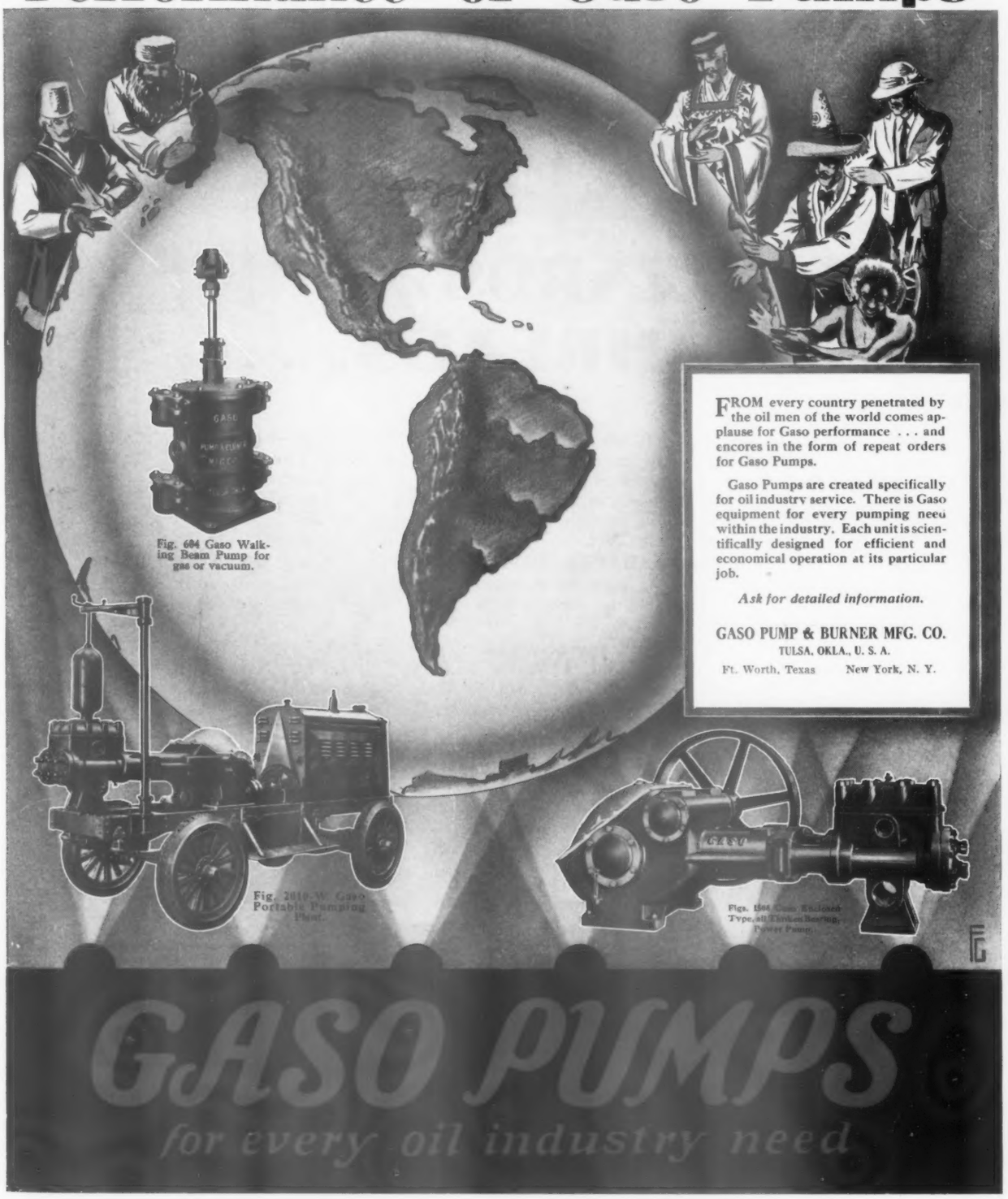


Fig. 604 Gaso Walking Beam Pump for gas or vacuum.

Fig. 2010-W Gaso Portable Pumping Plant.

Figs. 1504 Gaso Enclosed Type all Timken Bearing Power Pump.

FROM every country penetrated by the oil men of the world comes applause for Gaso performance . . . and encores in the form of repeat orders for Gaso Pumps.

Gaso Pumps are created specifically for oil industry service. There is Gaso equipment for every pumping need within the industry. Each unit is scientifically designed for efficient and economical operation at its particular job.

Ask for detailed information.

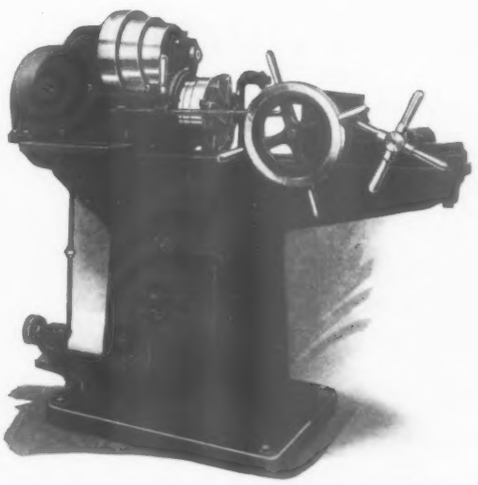
GASO PUMP & BURNER MFG. CO.
TULSA, OKLA., U. S. A.
Ft. Worth, Texas New York, N. Y.

GASO PUMPS
for every oil industry need

The HAZARDS of DAMAGE to THREADS
Consider how delicate are pipe threads and couplings—how the slightest blow will burr the threads of the best pipe. Then think how many, many times oil field pipe must be handled from pipe mill to destination—how many careless irresponsible hands it goes through before delivery—how it is banged on concrete sidings and dragged in sand and dirt.
NO WONDER COLONA THREAD PROTECTORS are recognized by most leading pipe manufacturers as vitally necessary to insure pipe delivery in the same perfect condition that it leaves the mill.
With these patented protectors readily available to every pipe manufacturer, ONE OF THE BEST EVIDENCES OF A PIPE MANUFACTURER'S CARE AND PRIDE in their product is the use of Colona Pipe Thread Protectors—the only type that gives 100 percent protection to both ends of the pipe.
Buy Colona Protected Pipe with confidence—specify Colona Protection in your order requisitions—it will save you much future annoyance and needless expense on pipe deliveries.
PITTSBURGH SCREW & BOLT CORP.
COLONA DIVISION
PITTSBURGH, PA.
COLONA
PIPE THREAD PROTECTORS

LANDIS—

for Oil Country Threading Needs!



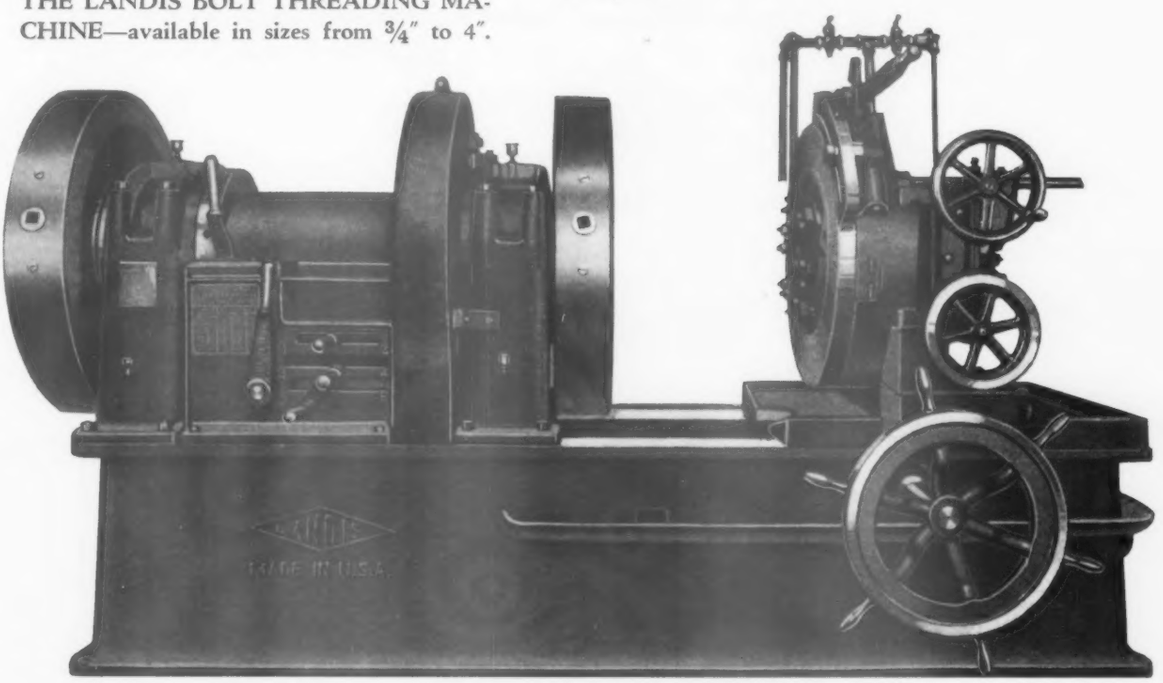
THE LANDIS BOLT THREADING MACHINE—available in sizes from ¾" to 4".

When your shop is equipped with a Landis Pipe Threading and Cutting Machine and a Landis Bolt Threading Machine it is well prepared for oil country threading needs.

The ease of operation of the Landis Pipe Threading and Cutting Machine, its high production and economical operation make this machine indispensable for the threading of oil country tubular goods.

The Landis Bolt Threading Machine will take care of your bolt threading requirements and do it economically. Ease of set-up and the high speed operation obtainable with the use of the free-cutting Landis Chasers are characteristics of this machine that have established it as a leader among threading machines.

Literature describing these machines will be sent on request.



THE LANDIS PIPE THREADING AND CUTTING MACHINE—Made in 2-4-6-8-12-16 and 20 inch sizes for threading oil country tubular goods.

LANDIS MACHINE CO., Inc.

Waynesboro, Penna., U. S. A.

REPRESENTED IN THE DOMESTIC OIL FIELDS BY: Colcord Wright Machinery & Supply Co., St. Louis, Mo.; D. S. Mair Machinery, Houston, Texas; Woodward Wight & Co., New Orleans, La.; Herberts Machinery & Supply Co., Los Angeles, Calif.; Herberts Moore Machinery Co., San Francisco, Calif.; Hendrie & Bolthoc Mfg. & Supply Co., Denver, Colo.

OUR PART

in Natural Gas Distribution

To make "on time" deliveries of tubular goods, compressors, engines, pumps, valves, fittings, etc., used in connection with building and maintenance of pipe line distribution projects, and to give to the natural gas industry that type of close co-operation so essential for the enconomical completion and operation of their properties.

Whether making a short, small diameter line, requiring only a joint or two of pipe, or an extension covering a thousand miles or more of large capacity requirements, Frick-Reid equipment will assist in the satisfactory performance of the completed project.

Equipment from foremost manufacturers.

AXELSON MANUFACTURING COMPANY, LTD.
Sucker Rods; Pull Rods; Plunger Working Barrels (Pumps); Stuffing Boxes, etc.

BEAUMONT IRON WORKS COMPANY
Dreadnaught Rotary Equipment. Water-cooled Drawworks; Timken Bearing equipped Straight Line Crown, Traveling and Tubing Blocks; Pumping Hoists; Electrically Driven Bailing line Reels; Structural Steel Walking Beams with patented Internal Truss Brace; Casing Shoes, clamps, river clamps, etc.

DONOVAN BOILER WORKS
Oil Country Boilers and Tanks. Boilers range from low pressure to 350 pounds W.P., for the deepest and hardest drilling demands.

FRICK-REID SERVICE BELTING
Friction Surface Rubber Belting made to our own specifications.

JONES & LAUGHLIN STEEL CORPORATION
Tubular goods including Buttwelded, Lapwelded and DOUBLE PIERCED Seamless steel in Line Pipe Tubing, Drill Pipe and Casing.

NATIONAL TRANSIT PUMP & MACHINE COMPANY
Pumps, Gas Engine Compressors, Pipe Line Equipment, etc.

WILLIAM POWELL COMPANY
Valves for the Petroleum Industry.

J. P. RATIGAN
The "SURE-GRIP" line of pumping equipment including Grips, Clamps, Beam Hangers, etc.

JOSEPH REID GAS ENGINE COMPANY
Gas Engines, two and four-cycle; Band Wheel and Direct Drive Pumping Powers, Receiving Boxes and other refinery equipment.

JOHN A. ROEBLING'S SONS COMPANY
Wire Line; Gas and Electric Welding Wire.

ROSSENDALE-RUBOIL COMPANY
"Camel Hair" and stitched canvas belting.

WALWORTH COMPANY
Fittings, Valves and Tools for Steam, Water, Gas, Oil and Air.

WHITLOCK CORDAGE COMPANY
Manila Cordage, Drilling Cables, Bull Ropes, Cat Lines, etc. Either Waterflex or Plain. Waterflex cordage is impervious to moisture.

Consult with us regarding your line extension problems

FRICK-REID

SUPPLY CORPORATION

Pittsburgh, Pa. Tulsa, Okla.

Back of *EVERY* length of

REG. U. S. PAT. OFF.
TONCAN
COPPER
MO·LYB·DEN·UM
IRON PIPE

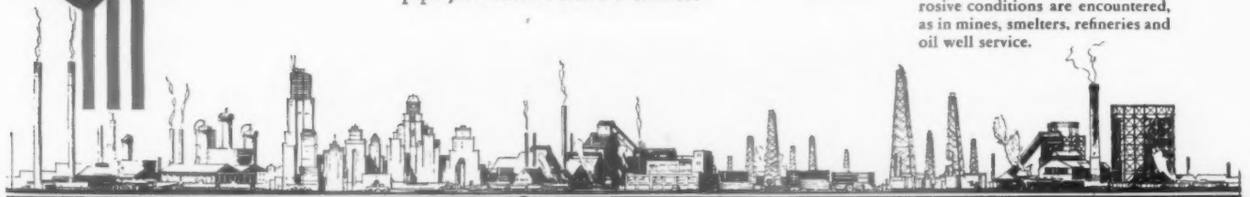
As protection to you we mark it BLUE

What is any sales chart but a record of user satisfaction?

Sales of Toncan Iron have mounted steadily for more than twenty years. Hundreds of thousands of tons have been placed in service. Figures, therefore, substantiate this statement—Toncan is time-tested iron.

Toncan Copper Molybdenum Iron Pipe makes its best friends on tough jobs. Since it is an alloy iron it is better able to resist corrosion. Due to its unique physical properties, it threads cleanly and can be worked easily. Its use is an economy because it gives lasting satisfaction in services where ordinary ferrous pipe just doesn't stand a chance.

Somewhere, sooner or later, you, too, will find a place where Toncan Iron Pipe will save you money. "Pipe for Permanence," a copy of which will be sent on request, outlines specific cases where Toncan is giving excellent service in plumbing and heating lines, water and gas lines in corrosive soil, steam lines, process liquor lines, and in many places where unusually severe corrosive conditions are encountered, as in mines, smelters, refineries and oil well service.



REPUBLIC STEEL CORPORATION · · YOUNGSTOWN, OHIO

BIRMINGHAM BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT
EL PASO LOS ANGELES NEW YORK PHILADELPHIA PITTSBURGH SAN FRANCISCO SEATTLE ST. LOUIS

7 Sizes from ⅛ to 12″
PIPE and FITTINGS

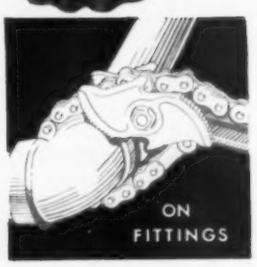
TWO IN ONE

The double purpose back of Williams' NEW "Vulcan Superior" Tongs—ONE tool for BOTH fittings and pipe—means real economy and convenience. Two tools—one for fittings and one for pipe—are unnecessary. "Vulcan Superior" Tongs are always ready just "as is" for either class of work.

The "V" recess in the jaws, combined with general design, give "Vulcan Superior" a greater number of grips, or "bites", on both fittings and pipe than other tongs.

The only chain tongs with reversible pipe-and-fittings jaws for double life. Proof-tested and CERTIFIED chain. Fully guaranteed.

J. H. WILLIAMS & CO.
"The Wrench People"
New York BUFFALO Chicago



Instant "bite" on fittings. No change in tongs required.

Immediate grip on pipe without change in tongs. No lost time.

"V" Recess in jaws assures a quick and firm grip on fittings.

When teeth wear, simply turn the jaws end for end.

WILLIAMS
DROP FORGED
VULCAN
SUPERIOR
PIPE AND FITTINGS TONGS

DRILLING KEROTEST VALVES

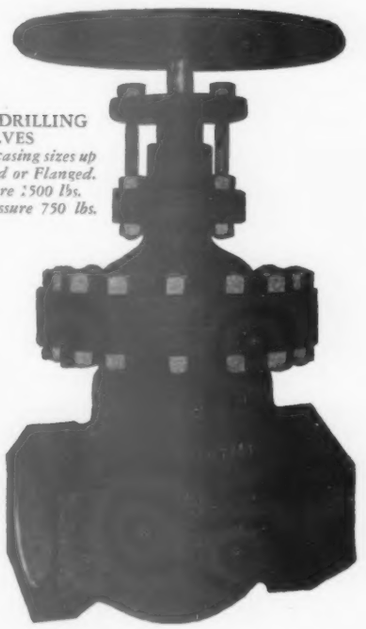
TYPE "M" DRILLING VALVES
All pipe and casing sizes 4" to 12" inclusive. Screwed or Flanged. Test Pressure 2000 lbs. Working Pressure 1000 lbs.

TYPE "S" DRILLING VALVES
All pipe and casing sizes 4" to 16" inclusive. Screwed or Flanged. Test Pressure 6000 lbs. Working Pressure 3000 lbs.

TYPE "D" DRILLING VALVES
All pipe and casing sizes 4" to 20" inclusive. Screwed or Flanged. Test Pressure 3000 lbs. Working Pressure 1500 lbs.

KEROTEST

TYPE "B" DRILLING VALVES
All pipe and casing sizes up to 9". Screwed or Flanged. Test Pressure 1500 lbs. Working Pressure 750 lbs.



The "ne plus ultra" among drilling valves all over the petroleum world—the original and only kerosene tested drilling valve... pressure tested and certified by the Pittsburgh Testing Laboratory before being shipped to the oil fields. Available for every pressure and every service. Always specify Kerotest for complete drilling valve satisfaction.

KEROTEST MANUFACTURING CO., PITTSBURGH, PA.
Carried in Stock and Sold by
NORVELL-WILDER SUPPLY CO., Houston, Beaumont, Shreveport, Fort Worth
OIL WELL SUPPLY COMPANY
Branch Stores in all Oil Fields
Export Distributors:
OIL WELL SUPPLY COMPANY, Pittsburgh, New York, Tampico, London

As Good as Good Steel can make it

The name "BETHLEHEM" is marked at intervals on every length of Bethlehem Steel Pipe—assurance that Bethlehem Pipe embodies the same high quality found in other Bethlehem Products.

One of the first requirements for making good pipe is good steel. The steel used in the manufacture of Bethlehem Steel Pipe is made under the supervision of skilled metallurgists, especially for this purpose.

The manufacture of Bethlehem Steel Pipe, from the mining of the ore, through the finishing operations, is controlled by one organization. Each step in the conversion of the steel into pipe is carried out under the supervision of men thoroughly experienced in pipe manufacture. The inspections and tests are most critical, so as to make certain that each length of pipe shipped conforms in every way to the Bethlehem standard.

When you purchase Bethlehem Steel Pipe, you are assured of pipe of uniform structure, and of high quality—pipe that will meet all requirements.

BETHLEHEM STEEL COMPANY

General Offices: BETHLEHEM, PA.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Detroit, Cincinnati, Chicago, St. Louis

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu

BETHLEHEM STEEL PIPE

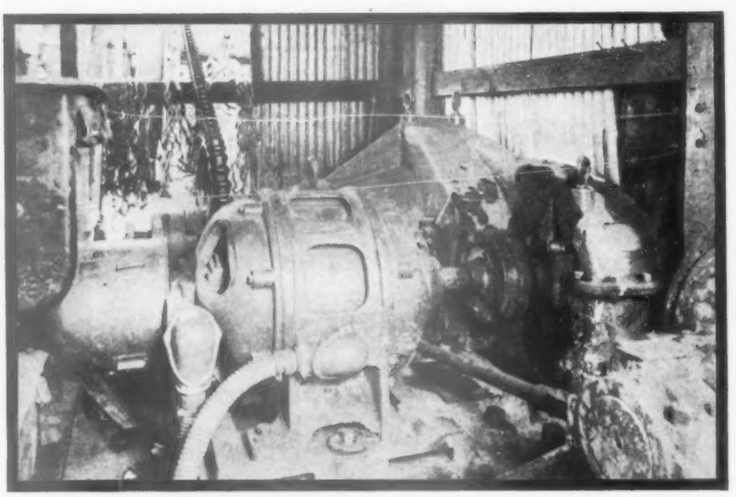
Bethlehem maintains at Houston, Texas, and at Wilmington, Cal., well-assorted stocks of line pipe, ready for immediate shipment. Both threaded and coupled and plain-end pipe are included in these stocks.

EVERYTHING ELECTRICAL FOR THE OIL FIELDS

They use MOTOR-DRIVEN pumps *at* SANTA FE SPRINGS

ONE of the large producing companies at Santa Fe Springs is a firm believer in preparedness. Although a number of its wells are still on flush production, this company has, by installing Westinghouse motor drive on more than 150 wells, anticipated the day when the oil stops flowing freely.

About one quarter of these wells are already being pumped on the beam and, therefore, this company is now profiting by the advantages of the Westinghouse motor drive, consisting of an oil field motor, control and gear.



A 20/50-hp. Westinghouse gas-protected oil field motor, controller and OP double-reduction gear unit, pumping at Santa Fe Springs

Among these advantages are:

- Continuity of service
- Compactness of driving unit
- Close speed adjustment of pumping rate
- Ample power and speed for cleaning and pulling
- Low maintenance and attendance costs

Whether you have one or a thousand pumping wells, you can install Westinghouse motor drive with the assurance that it is the modern, economical and dependable oil field power.

SOLD BY

OIL WELL SUPPLY COMPANY — **THE NATIONAL SUPPLY COMPANIES**

Westinghouse

T 31241

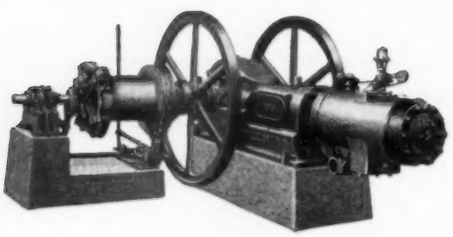
TUNE IN THE WESTINGHOUSE SALUTE OVER THE N. B. C. NATION-WIDE NETWORK EVERY TUESDAY AT 10:00 P. M., E. S. T.

Who uses A TICO 2 ENGINE *stays satisfied!*

THAT'S because Tico 2-Cycle Gas Engines *stay young*. They're built that way—with splash lubrication within an enclosed crankcase, with 3-point force-feed cylinder oiling and running balance that minimizes vibration. They are and stay *powerful*, too—thanks to Titusville cylinder design. Your next surely ought to be a Tico, too.

The crew on this Bert Greis Oil Co. job at Earlsboro, Okla. says this is "the snappiest engine we ever swabbed with."

TITUSVILLE OIL COUNTRY MACHINERY
BUILT WITH RESERVE RUGGEDNESS



THE TITUSVILLE IRON WORKS COMPANY
Division of Struthers Wells-Titusville Corporation
TITUSVILLE, PA.

Mid-Continent Office
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For Kansas, Oklahoma and Northwestern Texas
International Supply Company
Tulsa, Okla.

For California
California Machinery and Supply Company
2449-55 Hunter St., Los Angeles, Calif.

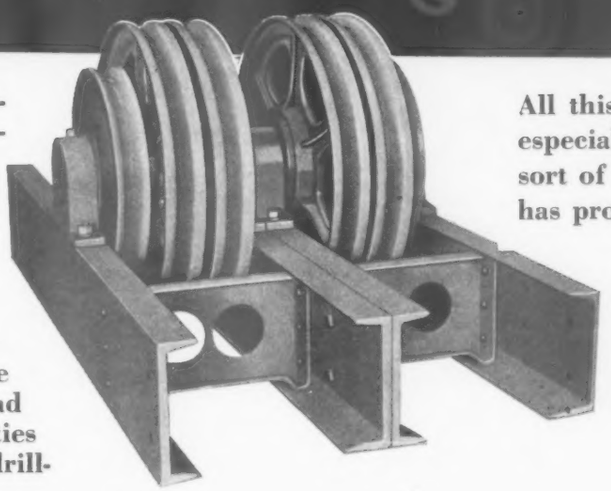
For Texas, Louisiana, Arkansas and New Mexico
Mid-Continent Supply Company
Fort Worth, Texas

For Export: American Steel Export Company, Inc.
535 Fifth Avenue, New York, N. Y.

TIW-54

TITUSVILLE
OIL FIELD EQUIPMENT
GAS ENGINES—PUMPS—BOILERS—DRILLING RIGS—STEAM ENGINES

Busting Gumbo *With Non-busting Bearings*



Here's *one* Roller Bearing that Drillers using—and Companies making — Heavy Duty equipment have found can be trusted to handle the loads. In short time AMERICANS have made a deep dent in the minds of all who have had to meet the responsibilities that come with deeper drilling.

All this because: 1—They are especially made just to do this sort of thing; 2—Their steel has proved superior in hardest drilling service; 3—They never need to be adjusted . . . Only three reasons — yes; but any one of them would be enough to explain the industry-wide preference.

The new "American" Catalogue is now ready for distribution

HEAVY DUTY AMERICAN

—Roller Bearings are used in this straight line crown block which has six sheaves mounted on two pins. The outside end of each pin rests in a separate box which is supported by a 50 lb. per foot I beam. The inside ends of the two pins rest in the same box which is supported by two 50 lb. per foot channel irons securely bolted together. There are four 36" manganese steel sheaves for drilling line which rotate on large, Heavy-Duty American roller bearings. Each of the six sheaves is lubricated from the end of the pin by an individual Alemite connection.

American Well & Prospecting Co.
Baash-Ross Tool Co.
Boykin Division, International Derrick & Equipment Co.
Doheny Stone Drill Co.
Emsco Derrick & Equipment Co.
Franklin Valveless Engine Co.
Hopper Machine Works
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Used by

Latex Iron & Steel Works, Inc.
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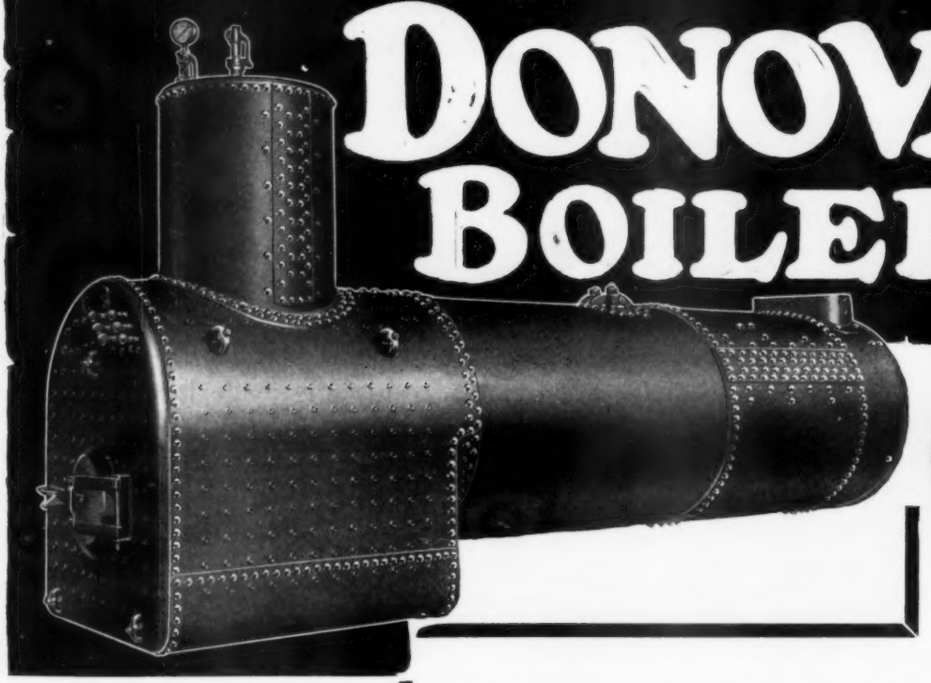
AMERICAN ROLLER BEARING COMPANY

PITTSBURGH PENNSYLVANIA

DONOVAN BOILERS



are Consistently Good

A FEW REASONS WHY—

The large dome over the firebox, staybolted rigidly to the crown sheet, assures plenty of dry steam and reduces the tendency to "pull over."

Handhole plates, A.P.I. std., located so as to provide for proper cleaning and inspection.

Safety valves connect directly into the dome head, avoiding the need for any intervening fittings.

Double feed openings, one on each side of the shell near the smokebox end.

Double blow-off openings, one in the front head and one in the throat sheet.

Strong and simple construction of doors and their attachments.

Workmanship of the finest throughout.

Each boiler conservatively underrated. Heating surface calculated on the inside surface of the tubes.

Bottom plate in one piece, reducing seams to the absolute minimum where great strength is needed.

Quality BOILERS Since 1890

DONOVAN BOILER WORKS, INC.

PARKERSBURG, W. VA.

NEW YORK OFFICE—30 Church Street

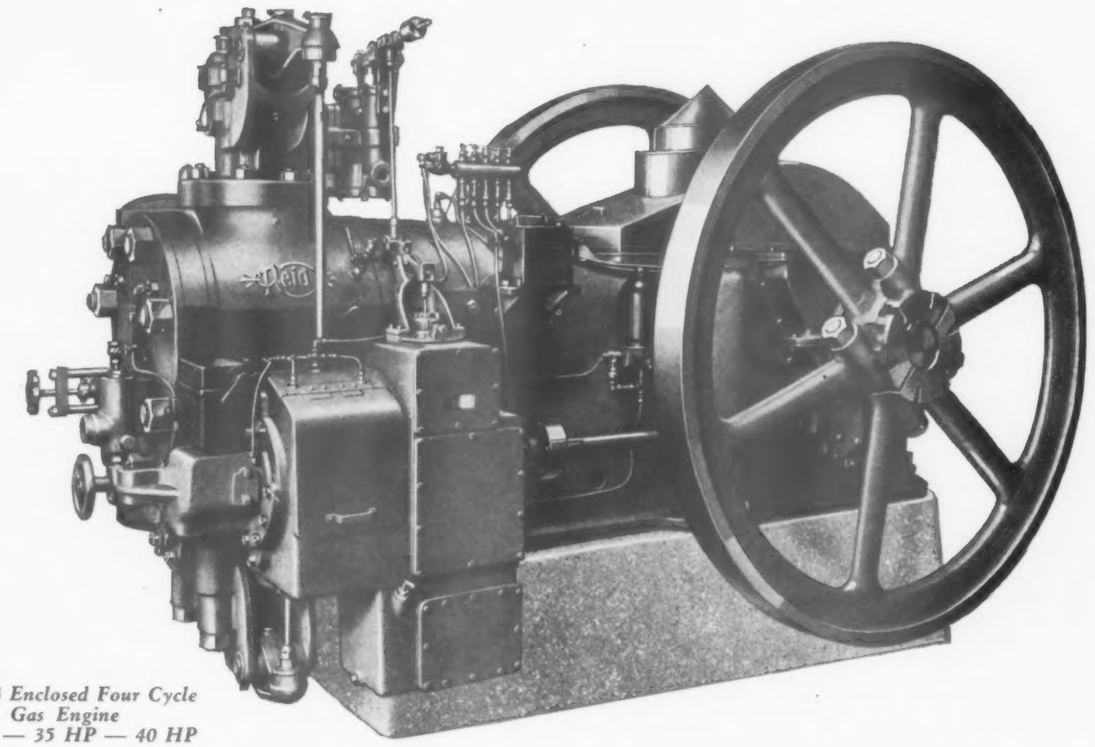
Mid-Continent and Eastern Distributors

FRICK-REID SUPPLY CORPORATION

Montana Distributors

GREAT NORTHERN TOOL & SUPPLY CO.

MIDLAND IRON WORKS



Type B Enclosed Four Cycle Gas Engine
30 HP — 35 HP — 40 HP

Everything You Want *in a* Gas Engine

POWER—dependability—low operating costs—long life—the qualities you want most in a prime mover, are inherent qualities of the Reid Enclosed Four Cycle Gas Engine.

Watch one of these engines in operation. Whether its load is light or full capacity, it will be running with a steady, smooth motion that emphasizes its balanced power and accuracy of construction.

Let our representatives explain in detail, the many features of the Reid Four Cycle Gas Engines.

JOSEPH REID GAS ENGINE COMPANY

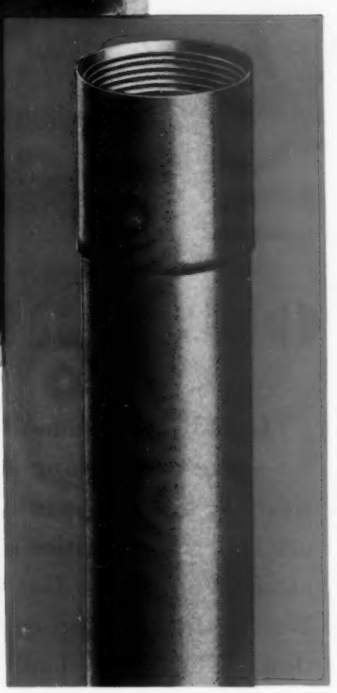
OIL CITY, PENNSYLVANIA, U. S. A.

BRANCHES—Marietta, Newark, and Logan, Ohio; Charleston, W. Va.; Shreveport, La.; S. R. Shoup, 724 Board of Trade Building, Los Angeles, California. BRANCH SHOP—Tulsa, Okla.

AGENCIES—Frick-Reid Supply Corp., Pittsburgh, Pa., and Tulsa, Okla., Distributors for Bradford and Pittsburgh, Pa., Kentucky, Oklahoma, Kansas, Texas, Arkansas and Wyoming. R. V. Moore, Bolivar, N. Y.

EXPORT SALES REPRESENTATIVE—Oilfield Equipment Co., Inc., 30 Church St., New York City.

Since 1828



WHEN THEY ALL AGREE

OPINIONS may differ when it comes to deciding whether seamless or welded pipe shall be used on a certain job but when it comes to the *brand* of pipe to be specified, most practical oilmen are unanimous in their approval of "Spang" Welded and "Standard Seamless" Steel Pipe.

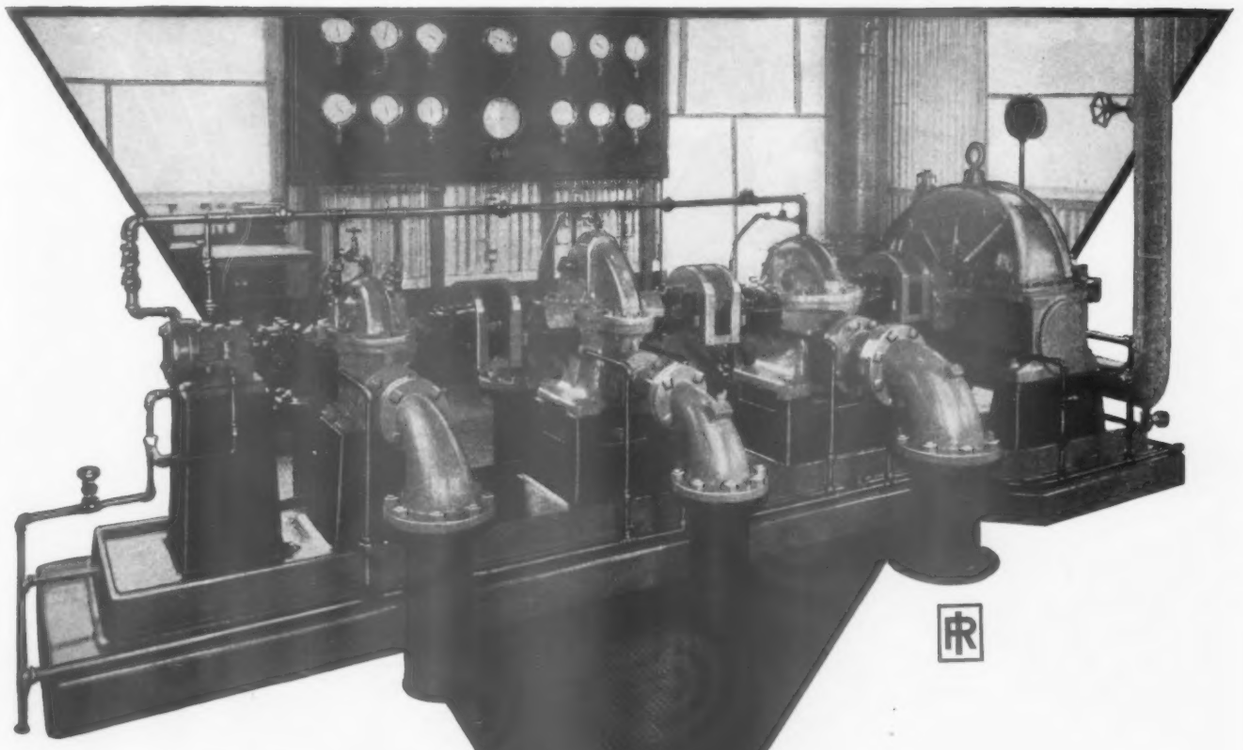
These oil country tubular products are famous for their dependability throughout the petroleum world—a line of pipe that has "grown up" with the oil industry from its earliest days.

SPANG WELDED *and* STANDARD SEAMLESS OIL COUNTRY TUBULAR PRODUCTS

SPANG, CHALFANT & CO., INC.

General Offices: CLARK BUILDING, PITTSBURGH, PA.

Sales Offices: CHICAGO, ILL. NEW YORK, N. Y. ST. LOUIS, MO. PITTSBURGH, PA. TULSA, OKLA. LOS ANGELES, CAL.
Welded Mills: ETNA, PENNA. SHARPSBURG, PENNA. *Seamless Mills:* AMBRIDGE, PENNA.



Cameron Pumps

An unusual and highly successful pumping unit! It is now being used for absorption oil service in a large natural gasoline plant on the west coast.

A single turbine drives three Cameron Pumps of different sizes, types, and characteristics. On the first line, a Cameron No. 6 "NFV" Pump handles water at the rate of 1400 g. p. m. against a total head of 65 feet; on the second, a No. 3 "HV" Pump moves lean oil at 400 g. p. m. against 336 feet head; while on the third line, fat oil is pumped by a No. 3 "NFV" with a capacity of 425 g. p. m. against a total head of 196 feet.

Cameron engineers are thoroughly familiar with every conceivable liquid handling problem, and their experience and ability are reflected in the great number of successful and diversified installations in the oil industry.

INGERSOLL-RAND COMPANY · 11 Broadway · New York City

A. S. Cameron Steam Pump Works

Branches or distributors in principal cities the world over

For Canada refer—Canadian Ingersoll-Rand Co., Ltd., 10 Phillips Square, Montreal, Quebec

Ingersoll-Rand

381-DV

Pays for it-self in savin gs

"Economy Is Right"

The Economy Pump & Oil Tool Co.

LOS ANGELES

Offices and Factory 4424 E. 49th St. Los Angeles, Calif. U. S. A. Office and Warehouse Ft. Worth, Texas. Representatives at Tulsa, Bristow, Ponca City, Duncan, Seminole and Earlsboro, Oklahoma; Fort Worth, Beaumont, Big Spring and Houston, Texas; Shreveport, Louisiana; also Representatives and distributing points at Long Beach, Huntington Beach, Santa Fe Springs, Taft and Bakersfield, California or any National Supply Company Store throughout the world.

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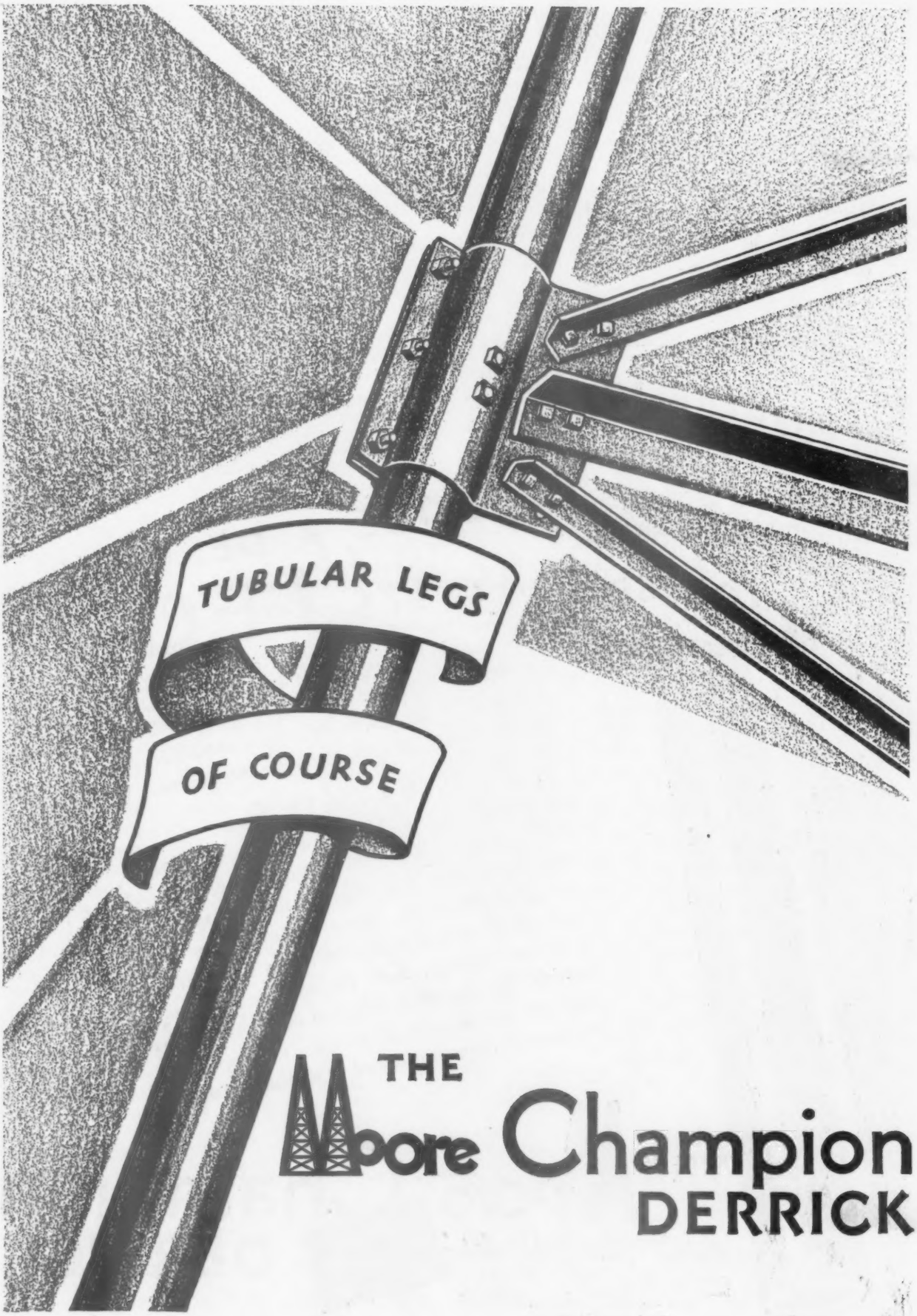
TRADE MARK

REG. U. S. PAT. OFF.



THE Moore Champion DERRICK

RELATIVE CARRYING CAPACITY OF STEEL SHAPES AS COLUMNS
WELDED
SEAMLESS A.P.I. GRADE "C"
34% 47% 56% 75% 100%
BASED ON 10 FT. LENGTH WEIGHING 10.5 LB. PER FOOT
TUBULAR LEGS
OF COURSE

JUDGE A DERRICK BY ITS LEGS

For continuous heavy service, look first to leg strength. In that respect the Moore Champion Derrick is notable. It has tubular leg sections of 40-50 carbon seamless steel, galvanized inside and outside.

BRACING

A derrick with such leg strength requires especially strong bracing. Moore bracing is of structural steel throughout. Wing braces in the first panel form an important feature. Seven foot panels are used, with full X or double X bracing, as the length of girts may require. Bolts are tightened with one wrench. This and other details of design add to the ease and convenience of erection. Moore bracing is furnished either galvanized or aluminum painted.

THE Moore Champion DERRICK

Moore ALL STEEL RIG EQUIPMENT

LEE C. MOORE AND CO., INC.
PITTSBURGH Established 1907 TULSA
New York Offices
Oilfield Equipment Co., 30 Church St., New York, N. Y.
DALLAS, TEXAS WICHITA, KANSAS CASPER, WYO.
SHREVEPORT, LA. HOUSTON, TEXAS
Stocks in All Principal Fields

The third of a series of advertisements by the Oklahoma Contracting Company showing the history and the development of the pipe line industry

THE TEAMSTERS FOUGHT THE BATTLE OF THE PIPE LINES IN PITHOLE CITY

A traveler in Pithole County, Pa.—the scene of America's first oil boom—could journey a whole day without seeing either the beginning or the end of the wagon train. Six thousand wagons, each carrying from five to seven barrels of oil, constantly plied the roads between Pithole City and barges on Oil Creek.

Oil at the well sold for ten cents a barrel. The drivers of the wagons, realizing that they were the most important link in the economic chain of oil production, named and got their own prices for hauling it from the field. At a cost of three dollars or more per barrel for transportation, the operators saw that within a short time it would become uneconomic to develop the field.

Then out of the mire of the oil field, there arose the oil industry's greatest benefactor. Samuel Van Syckle believed that oil, like water, could be pumped through pipes. In 1865, he laid a two-inch pipe from Pithole City to Miller's Farm, a distance of four miles.

The teamsters, their livelihood threatened, protested. Collecting tanks were burned. Wells were fired. The pipe line was cut. Men on the job of laying the lines were attacked and beaten. Finally the militia was called out to protect the men who were working on this first pipe line.

Today the 156,000 miles of trunk pipe lines in use in the United States evidence the fact that no one man nor many can stay the hand of progress. Throughout the South and West, the Oklahoma Contracting Company has laid many of the pipe lines that bring the power of the oil and gas fields to the industries of the world.

On the St. Louis-Monroe 22" Gas Line

Making history in modern pipe line construction. . . .

On the Interstate Gas Company's line from the Panhandle to Denver, 86.7 miles of 22-inch Dresser coupling pipe was laid in 80 working days by the Oklahoma Contracting Company. This line was tested to 400 pounds gas pressure with no leaks.

On the Shell McCamey main line to St. Louis 99 miles of 10-inch welded pipe went into operation 60 working days from the time the Oklahoma Contracting Company's gangs broke the first ground.

Transportation is still the most important link in the economic chain of oil production. The Oklahoma Contracting Company's past record of achievement is their guarantee of a good line on the contract specified time.

OKLAHOMA CONTRACTING COMPANY

PIPE LINE ENGINEERS AND CONTRACTORS

General Offices: 1205 Allen Bldg., Dallas, Texas • Branch Office: Oklahoma Gas Bldg., Tulsa, Okla.

Oil or money- it's yours only when it's protected

They say possession is 9/10ths of the law. Obviously it is 10/10ths of the law of nature. For mother nature's oil is yours only when you can get it and hang on to it.

Darling Gate Valves are the safe locks for your oil possessions. They open easily and close tightly and they last and last. The revolving discs on the gate valve seat in a different position on each closing permitting even distribution of wear over the surface of the discs—resulting in long wear and effective closing.

Write for literature. The literature is complete and accurate and will give you a clear picture of just what Darling Valves are.

DARLING
Forged Steel
Gate Valve

Dar-o-loy trimmed for drilling well control, flow lines and other hazardous conditions.

DARVAL
Semi-Steel
Flanged End
Gate Valve

Dar-o-loy trimmed. Made in all sizes for general field use.

DARLING
GATE VALVES

DARLING VALVE & MANUFACTURING CO., *Williamsport, Pa.*

NEW YORK — CHICAGO — OKLAHOMA CITY — HOUSTON

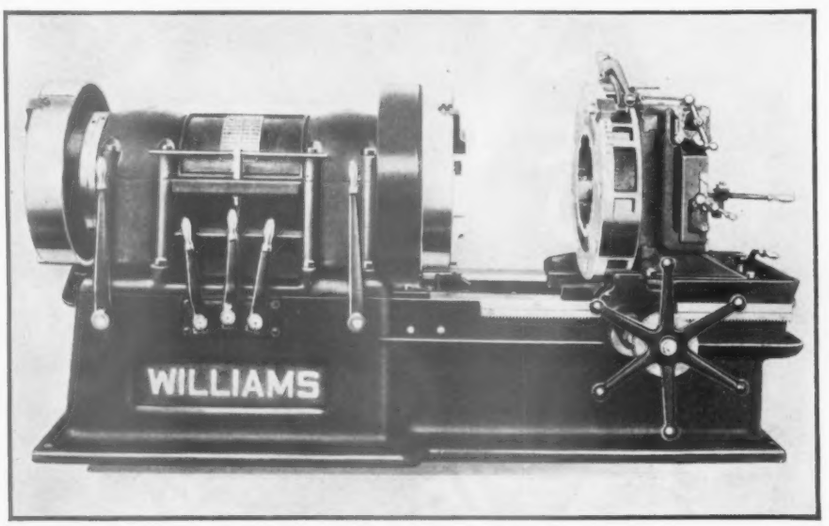
Mid-Continent Distributors
Frick-Reid Supply Corp. — International Supply Co. — Petroleum Supply Co.

Foreign Sales Mgr.—H. M. Hein, Room 1405, 152 W. 42nd St., New York, N. Y.

The Rapiduction is a Leader in the Most Complete Line of Hand and Power Operated Pipe and Bolt Threading Equipment in the World.

3½" PIPE OR 12" PIPE

You Can Thread Either with a No. 12 Rapiduction Without Changing Dies or Die Heads — and do it 25% Faster.



THAT'S one reason you'll find so many Williams Rapiductions in the oil field and refineries.

You don't have to change the dies or die head every time you want to thread a different sized pipe. With a No. 12 Rapiduction you can thread or cut-off 11 different sizes of pipe from 3½ to 12 inches without touching either dies or die head. And in addition the Rapiduction is 25% faster in threading and cutting-off speed.

These two features mean hours saved every day—hours of added productive machine and labor time. And that, in turn, means less operating cost—more savings for you.

There are many other Rapiduction features of equal importance. They are features you should know about for they, too, mean added savings—added profits. It will pay you well to ask your supply house salesman or the Oster-Williams representative in your territory for full information. We'll gladly send you the name of either—at no obligation. Just write

The Rapiduction is a Leader in the Most Complete Line of Hand and Power Operated Pipe and Bolt Threading Equipment in the World.

THE OSTER MANUFACTURING COMPANY

JOINED FOR GREATER SERVICE

WILLIAMS TOOL CORPORATION

MAIN SALES OFFICE
2064 East 61st Place, Cleveland, Ohio

BRANCH OFFICES
Boston, New York, Philadelphia, Chicago.

For Strenght and Uniformity Use

Look for the triangle on the reel

WICKWIRE SPENCER STEEL CO.

Home Office: 41 East 42nd St., New York City

Branches: San Francisco Los Angeles

WICKWIRE SPENCER STEEL CO.

WICKWIRE SPENCER WIRE ROPE

Also distributed by

WICKWIRE SPENCER SALES CORP.
Tulsa, Oklahoma
Seattle, Wash. Portland, Ore.

T. T. Word Supply Co. Houston, Texas
Acme Tool Co. Breckenridge, Texas
Lucey Products Corp. Tulsa, Okla.
Standard Supply & Hdwe. Co. New Orleans, La.
A. F. Keck & Co. Butler, Pa.

Over 100,000 miles of Dresser coupled pipe lines — mostly in *high pressure* systems — bear constant witness to the fact that Dresser Couplings remain permanently tight.

DRESSER COUPLINGS *Dominate*

1880 S.R. DRESSER MANUFACTURING CO. 1930
BRADFORD. PENNA.

"Here, Lad—

That was a happy idea of yours to 'Stable-Arc' weld that last pipe line.

It's by far the best line we ever built.

It looks now that it must stand as a record unless you can give birth to another idea."

The Lincoln "Stable-Arc" Welder

— welds easier
— makes better welds
— permits greater output because of the steady uniform arc throughout entire welding range, which is the result of:

Variable voltage design
Laminated magnetic circuit
Separately-excited generator field
Double control of welding heat
All steel construction

No other welder has all these features.

"No, Pop—

But since I can't, perhaps we can *adopt* one.

My friend here, *Arc Welding,* has just had another cubit added to his stature in industry through Lincoln's new 'Fleet-Weld' electrode.

It will weld joints *more than twice as fast* as can be done with ordinary electrodes, and the welds so produced by these new high-speed 'Fleet-Weld' electrodes are extremely ductile—averaging around 20%—and its average tensile strength is away beyond that of ordinary structural steel—in fact 20,000 lbs. beyond.

It's hard to beat that one, so let's adopt the idea for the new line . . . It's better than giving birth to another idea because, as you well know, Pop, a foolproof stork is a rare bird."

The Lincoln Electric Co.,
Dep't. No. 33-4, Cleveland, O.

"Stable-Arc"

W-141

LINCOLN WELDER

. . . . . TO PRODUCE DEPENDABLE WELDS

IN welding gas and oil pipe lines selection of materials and instruction in correct welding technique are important factors of good welding practice . . . Under Linde Procedure Control careful and studied selection of materials and application of proven methods make oxwelded joints as strong as the pipe and permanently leakproof — 100 per cent efficient.

THE LINDE AIR PRODUCTS COMPANY . . . THE PREST-O-LITE COMPANY, INC. . . . OXWELD ACETYLENE COMPANY . . . UNION CARBIDE SALES COMPANY,

Units of UNION CARBIDE AND CARBON CORPORATION

General Offices . . . . . New York UCC **Sales Offices . . . In the Principal Cities**

65 Linde plants . . . 48 Prest-O-Lite plants . . . 174 Oxygen Warehouse stocks . . . 156 Acetylene Warehouse stocks
42 Apparatus Warehouse stocks . . . 245 Union Carbide Warehouse stocks

Can tell You in a minute

there is no delay in answering your inquiry or filling your order when it is placed with the Hercules Supply Company. A close touch with every detail enables us to know exactly at all times the progress of your order. You get instantaneous service from a compact organization.

[STORES *fully stocked with standard lines are located at convenient points in Texas and New Mexico.*]

HERCULES SUPPLY COMPANY

J·T·McCARTHY JR
EVERYTHING FOR OIL WELLS

Spang Jars
Worthington Pumps
B-J. Elevators and Tongs
Regan Control Heads, etc.
Standard Seamless and Etna Pipe
Cameron Blow-Out Preventers, etc.
Fishing Tools, both Rotary and Cable
American Steel & Wire Co. Wire Lines
"Lucey," "Dreadnaught," "Regan" Rotary Tools

Gray Tools
Climax Engines
Baker Oil Tool Products
Walworth Valves, Fittings
Penberthy and Chicago Injectors
American Bull Ropes and Cat Lines
Oil W. Imp. Control and Oil Savers
Guiberson Tubing Catchers, Swabs, etc.
Hughes Rock Bits, Gate Valves, Core Barrels

General Office: FORT WORTH

STORES: Pampa, Texas - Isom (Borger), Texas - Refugio, Texas
Wink (Pyote), Texas - Vernon, Texas - Hobbs, New Mexico

Tubes of ENDURO KA2 defeat corrosion cracking sour crudes

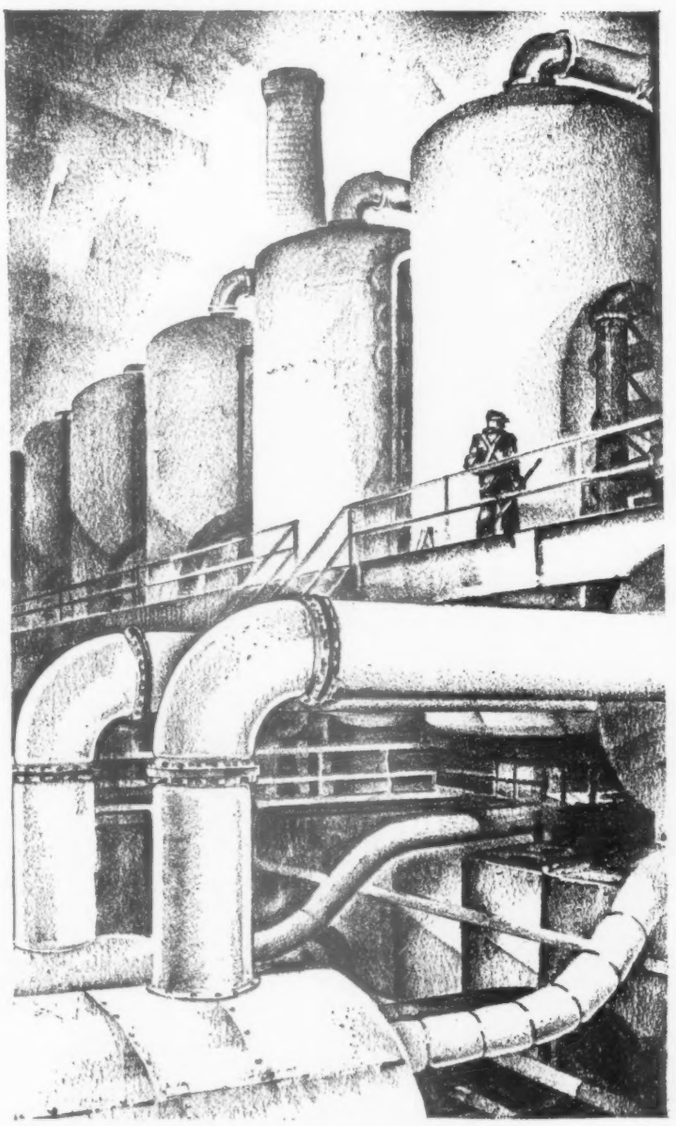
Excerpts from an article entitled "Corrosion in Cracking Coil Tubes" which appeared in "The Oil and Gas Journal", March 6—prepared by Briand Mead, S. S. Shaffer and E. Camp, Development Department of Humble Oil & Refining Co.

"IN recent years the cracking of charge stocks derived from sour crudes has become more and more general since the discovery of large productive areas of such crudes, especially in Texas, etc.

"In 14 cracking coil furnaces, alloy tubes have been substituted for carbon steel tubes throughout furnaces where the temperature of the oil is above 700° F. The alloy used was KA2, made by the Central Alloy Steel Corporation.

"Data compiled furnishes a good comparison between the rates at which the KA2 and the regular carbon steel corrode. The KA2 tubes, which were placed under the most severe temperature and corrosive conditions, show practically no gain in interior diameter in this corrosive service, whereas carbon steel tubes have frequently to be replaced.

"The 14 furnaces that have had KA2 tubes installed have continued operations without further trouble."



Central Alloy Division

REPUBLIC STEEL CORPORATION

CANTON, OHIO MASSILLON, OHIO

World's Largest and Most Highly Specialized Alloy Steel Producers

Makers of Agathon Alloy Steels

Cleveland Detroit Chicago New York St. Louis
Syracuse Philadelphia Los Angeles Seattle
Cincinnati San Francisco

Export Office: New York Central Building, New York, N. Y.

ENDURO

NIROSTA

GUARANTEED TO OUTWEAR AND OUTPERFORM ANY OTHER V-BELT ON SINGLE OR MULTIPLE DRIVES • • • •

Repeatedly—both in the laboratory and in the field—the Gilmer V-Belt has proved its definite superiority. It wears longer, performs better, and is more economical than any other V-Belt made. The Gilmer Co., makers of the world's best known V-Belt, stands firmly back of these statements, and will gladly replace any Gilmer belt that fails to live up to them.

Test out a set of Gilmer V-Belts and find out for yourself why they are being used by hundreds of the largest industrial plants in the country. L. H. Gilmer Co., Tacony, Phila., Pa.

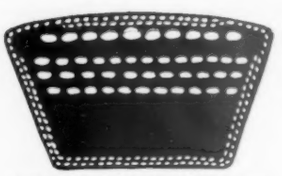
Gilmer

MAKERS OF THE
WORLD'S BEST KNOWN V-BELT

Reasons why the Gilmer V-Belt lasts longer

Note the extremely rugged construction of the Gilmer belt. Note the layers of extra strong cord imbedded in live rubber near the center of the belt —the neutral axis where the greatest strain comes. Gilmer originated this construction. Specially prepared rubber, made to withstand a terrific amount of compressing and stretching, is used throughout. Rubber and cord are fused into one solid, wear-resisting mass and enclosed in a rugged, protective armor of heavy canvas.

This belt is scientifically built up, layer by layer, in a mould *the exact shape of the sheave on which it will eventually be used*. This painstaking construction insures perfect sheave fit—another vital reason why the Gilmer belt outwears and outperforms others.



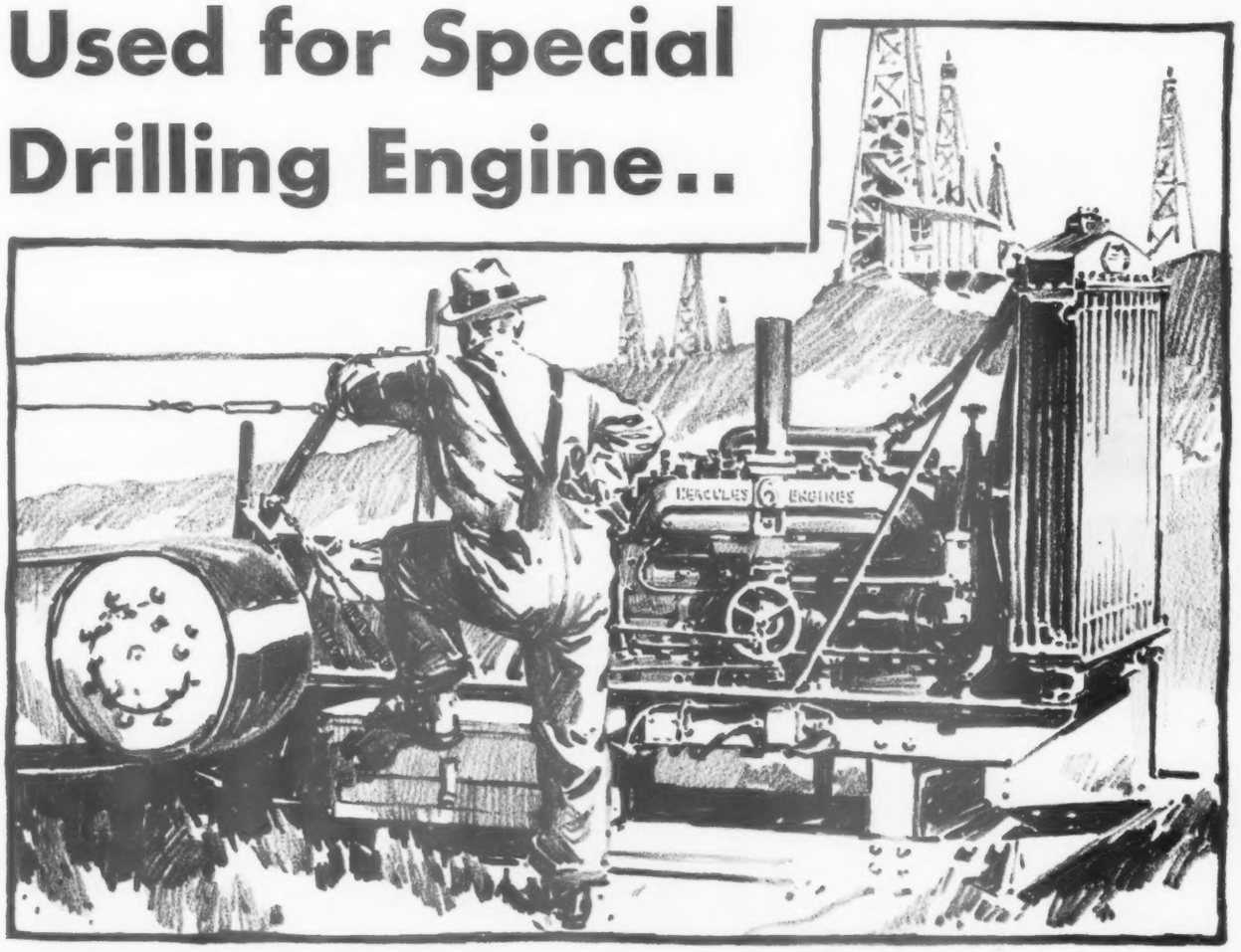
This is a cross-section drawing of a Gilmer V-Belt

TO DESIGNERS OF MACHINERY

Gilmer has prepared, especially for designing engineers, a technical handbook on small belt drives and installations, the first complete book of its kind ever published. It is full of facts that should be of interest and value to the designing engineer. A copy will be sent, without cost or obligation, to those requesting it.

HERCULES SIX . . . . .

Used for Special Drilling Engine..



IN continuous use for more than 8 months, a Riise Drilling Engine—built by the Riise Engineering Company and designed around a Hercules Heavy-Duty Six—established a perfect record of service. During this period, 13 holes were drilled—the operating equivalent of over 100,000 miles of motor truck service—and yet it was not even found necessary to grind the valves!

Such thoroughbred performance is not unusual for Hercules-Powered equipment. Hercules Engines are designed and built to perform reliably and economically, no matter how difficult the job. On heavy-duty oil-field machinery, Hercules Power contributes always to uninterrupted, low-cost operation.

HERCULES MOTORS CORPORATION, CANTON, OHIO, U. S. A.

WEST COAST BRANCH: LOS ANGELES, CAL. MID-CONTINENT BRANCH: TULSA, OKLA.

Hercules Power Units and Parts are also carried in stock by the Norvell-Wilder Supply Company of Houston, Texas; Beaumont, Texas; Fort Worth, Texas and Shreveport, Louisiana and by Bovaird & Company of Bradford, Pennsylvania.

HERCULES ENGINES

What Interests the Driller?

FEET OF HOLE DRILLED

and

CONTINUOUS OPERATION

A few reasons why

BALDWIN

1030 S and 1240 S

[A.P.I.No.3] [A.P.I.No.4]

PRECISION OIL WELL CHAINS

do have LONGER LIFE and FEWER SHUTDOWNS in actual operation . . .

(1) *Straight Side Bar Construction,* lessens chance of elongation and makes possible more accurate machining.

(2) *Alloy Steels,* heat treated in most modern furnace equipment possible to buy, results in tough core and hard surface.

(3) *Precision Machining,* Baldwin pins and bushings have always been ground to exact size thereby insuring most accurate fits.

(4) *Two Oil Holes in Bushings,* guarantees full lubrication to chain pins.

BALDWIN—Originator of Precision Oil Well Chains.
Originator of Straight Side Bar Construction.

BALDWIN-DUCKWORTH CHAIN CORP., Baldwin Division

WORCESTER, MASS., U. S. A.

ORIGINATORS OF PRECISION OIL WELL CHAINS

Distributors: Geo. J. Fix Company, 2507 Commerce St., Dallas, Texas; J. W. Minder Co., 927-929 Santa Fe Avenue, Los Angeles, Cal.; The Petroleum Equipment Co., 2800 South Alameda St., Los Angeles, Cal.; The Adam-Hill Co., 244 Ninth St., San Francisco, Cal.; Lucey Products Corp. of Tulsa, Healdton and Duncan; International Supply Company, at Okmulgee, Wewoka and Stroud; T. T. Word Supply Company, Houston, Beaumont, Texas; Shreveport and Lake Charles, La.; Grover C. Johnson, Wichita Falls, Pyote and Big Springs, Texas.

Export Department: W. S. Fellows, 39 Cortlandt St., New York City.

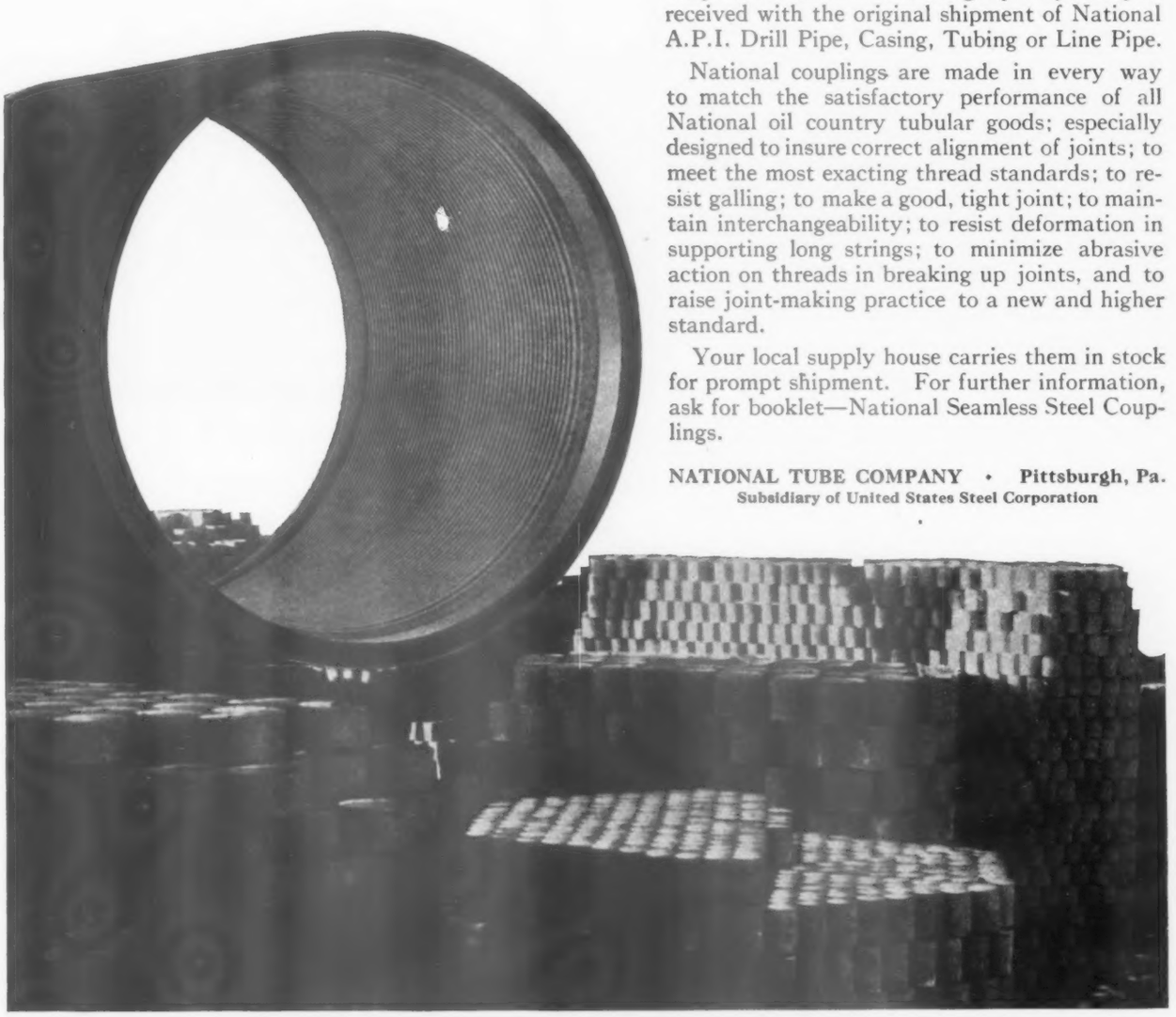
What about your COUPLINGS?

WHEN reconditioning tubular material for oil and gas service, do you give the couplings the same careful consideration as you do the pipe itself? If you specify National Seamless Steel Couplings for replacements it is possible for you to retain the same high quality that you received with the original shipment of National A.P.I. Drill Pipe, Casing, Tubing or Line Pipe.

National couplings are made in every way to match the satisfactory performance of all National oil country tubular goods; especially designed to insure correct alignment of joints; to meet the most exacting thread standards; to resist galling; to make a good, tight joint; to maintain interchangeability; to resist deformation in supporting long strings; to minimize abrasive action on threads in breaking up joints, and to raise joint-making practice to a new and higher standard.

Your local supply house carries them in stock for prompt shipment. For further information, ask for booklet—National Seamless Steel Couplings.

NATIONAL TUBE COMPANY • Pittsburgh, Pa.
Subsidiary of United States Steel Corporation



NATIONAL *Seamless Steel* COUPLINGS

A Page From the History of American Business

Each separate era in American business history has produced its eminent banking institutions. Seaboard and cattle country, mining and agriculture, lumbering and manufacturing . . . . . all have developed important names in banking, with relative importance determined partly by locality, but mainly by the vision, courage and character of the bank itself.

Among the banks of America to thus achieve leadership in a particular banking field the Exchange National Bank of Tulsa occupies a position of unique distinction, for the name of the Exchange National is synonymous with oil financing.

No other bank has been so closely identified with the oil industry from its infancy. No other bank has both officers and directors so unanimously familiar with all phases of oil practice. No other bank has made such a consistent effort to be of outstanding service to the oil industry . . . . or with such success as to earn universal recognition as The Oil Bank of America.

EXCHANGE BANKS OF TULSA

The Exchange National Bank — Exchange Trust Company — Exchange National Company

NATURAL GAS...

Fuel of Economy

FROM such widely separated gas producing areas as the fields of Coastal and Southwest Texas and those of North Louisiana and East Texas, the operating subsidiaries of United Gas Company, with estimated reserves of 539 billion cubic feet, are in a position to insure customers an unfailing supply of this economical fuel.

These operating subsidiaries are serving an estimated population of 1,141,000 people in East, South and Southwest Texas and Monterrey, leading industrial city of Northern Mexico.

Houston Gulf Gas Company
South Texas Gas Company
Dixie Gulf Gas Company
Southern Gas Company

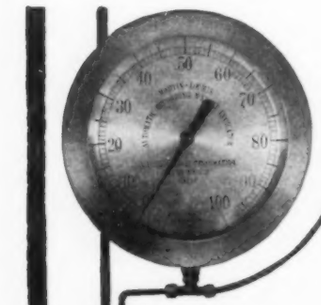
SUBSIDIARIES OF

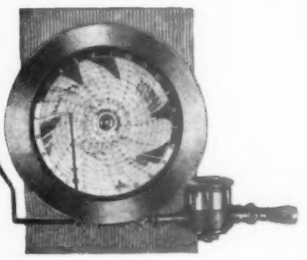
·UNITED GAS COMPANY·

"Moody-Seagraves Management"

ESPERSON BUILDING HOUSTON, TEXAS

MARTIN-DECKER AUTOMATIC RECORDING WEIGHT INDICATOR





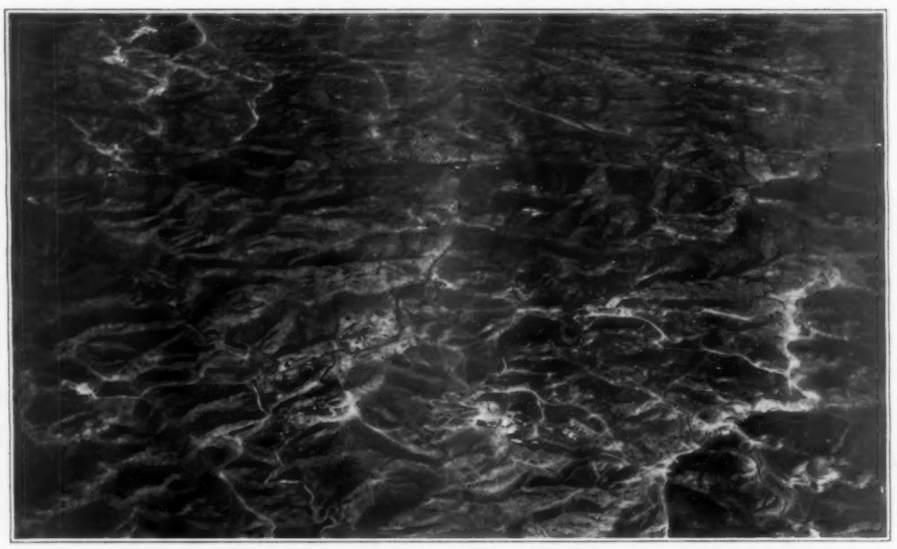
AT

Kettleman Hills

100%

Of The Wells Drilling On April 2, 1930 Were Equipped With

Martin-Decker Weight Indicators



The difficult drilling conditions encountered in the Kettleman Hills field justify the most modern and scientific equipment. Great depths, terrific pressures, hard formations, everything to make a difficult drilling job, far removed from supply sources. It is only natural that these operators should choose the dependable Weight Indicator.

MARTIN-DECKER CORPORATION

Formerly

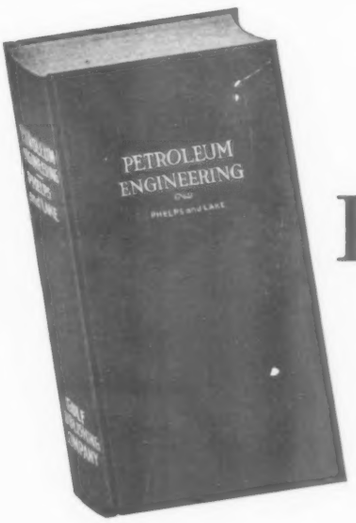
Martin-Loomis Corporation

3433 Cherry Ave.,
LONG BEACH
CALIFORNIA

Mid-Continent Distributors
Reed Roller Bit Company
Houston, Texas

Foreign Distributors
Oil Well Supply Company
Pittsburgh, Pa.

WEIGHT RECORDING, MEASUREMENT AND CONTROL



PETROLEUM ENGINEERING

by

PHELPS AND LAKE

Completely Revised and Enlarged

The reception which the petroleum industry tendered the first edition of PETROLEUM ENGINEERING proved the necessity for a complete handbook for oil field operators. This handbook has been completely revised and enlarged so that the second edition now covers the newest producing methods including gas lift theory and operation. Many additional charts for compression, oil and gas flow, and other gas lift problems are included for the simplification of the computations involved. Additional alignment charts for rapid calculations without involved mathematics bring the total up to sixty-five, covering dip and strike computations, capacities of tanks and casings, oil gravity corrections, gas volume, density, and compression problems, flow of gas, oil and water in pipes, viscosity relations, collapsing and bursting pressure of pipe, and conversion charts for all units. The mathematical section including, as it does, principles and tables of algebra, trigonometry, analytical geometry, calculus, and logarithms, is identical with similar sections of standard handbooks used in other branches of engineering. General and Petroleum Geology, Operating Technology and Economics are completely covered in text and tables. This complete handbook of 637 pages, well illustrated and indexed, attractively bound with flexible fabricoid binding and gilt edges, is priced at $5.00.

To insure obtaining your copy send a check today to

The Gulf Publishing Company
Houston, Texas

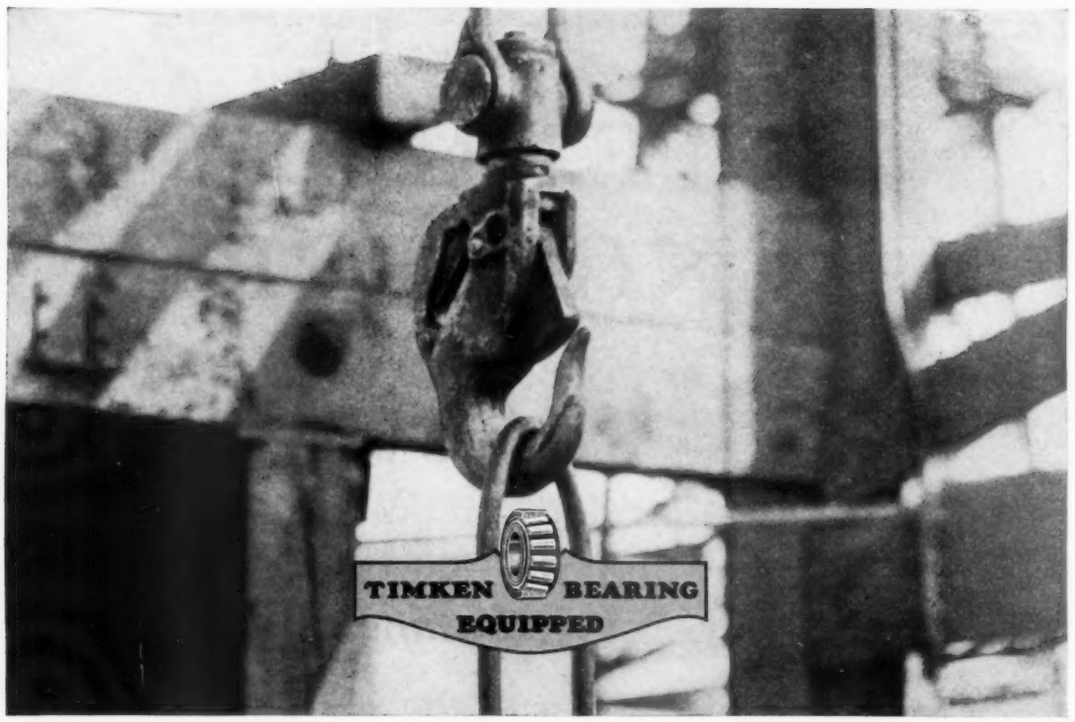
The GULF PUBLISHING COMPANY
HOUSTON, TEXAS

Please send me.....copies of PETROLEUM ENGINEERING, by Phelps & Lake, for which you will find enclosed check for $....., as payment in full. ($5.00 per copy).

Name .....

Street and No. .....

City and State .....



Let The Weight Be What It May—D & B Simplex Hooks Are Timken-Equipped

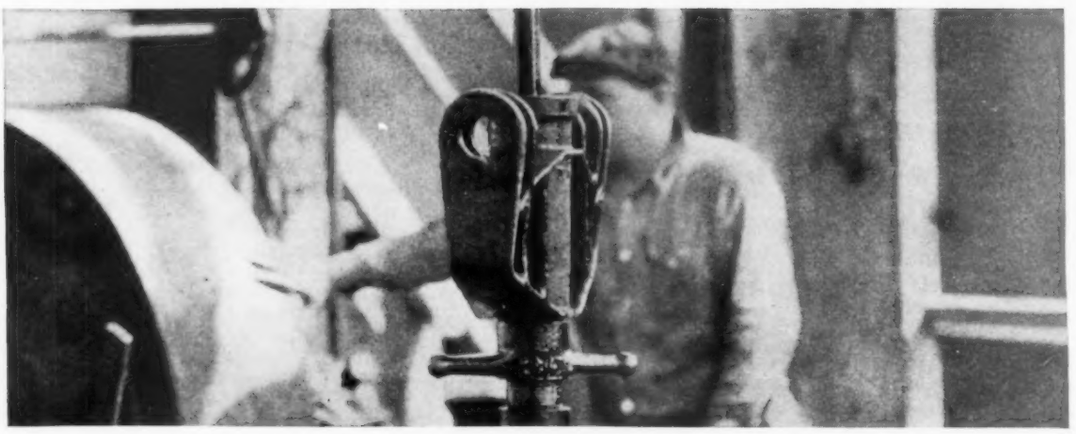
Oil well hooks should be able to safely sustain weights far in excess of those ever likely to be imposed upon them. At the same time, they must swivel freely and smoothly under any and every load.

This means that the swivel bearings must have an unusual combination of anti-friction and load-carrying capacities. With unerring judgment, the manufacturers of D & B Simplex Safety Oil Well Hooks, the D & B Pump & Supply Company, Los Angeles, (a division of Emsco Derrick & Equipment Company) have placed the responsibility where it rightly belongs—on Timken tapered roller bearings.

In common with the makers of all types of oil field equipment, they have found in the exclusive combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel, a combination of abilities which no other type of bearing can duplicate—for Timkens fight friction to a finish, make lubrication negligible, carry radial, thrust and combined loads with sureness, add years to the life of the equipment in which they are used and take the menace out of maintenance.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* BEARINGS



MAY -5 1930

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Member Audit Bureau of Circulations

VOLUME 57, No. 7

MAY 2, 1930

Edited Weekly at Houston, Texas

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SPENCER W. ROBINSON, EDITOR

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by

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Keep away from Crooked Holes!

SYFO CLINOGRAPH

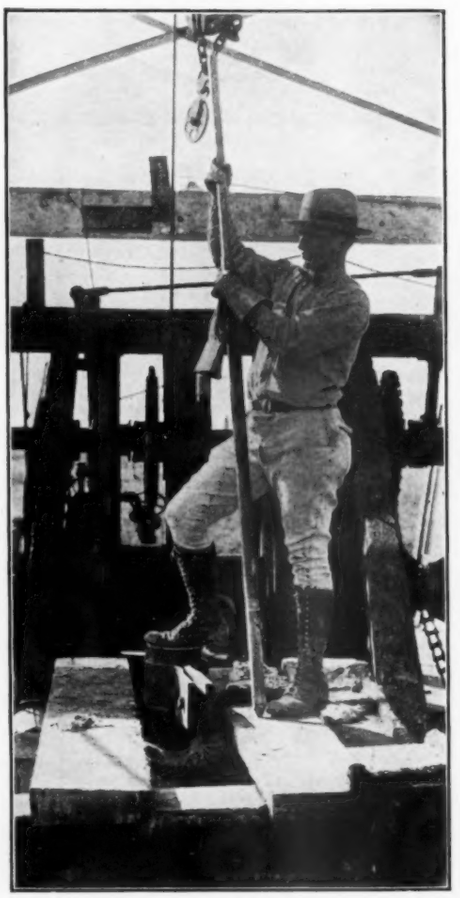
The perfect device for the daily recording of vertical deviation in drilling
Permanent Records . . . Quickly made . . . No danger . . .
Inexpensive . . . Direct and Accurate . . . . . .

PRODUCERS everywhere have come to recognize the costly results of the crooked hole. Today the virtue of less haste—more speed is finding more favor. For crooked holes are costly things, too often resulting in bad twist-offs of drill pipe and casing failures. They are undoubtedly the cause of a great many complicated fishing jobs, increasing the time necessary to complete the contract.

Recognition that careful drilling can obviate much of the deviation from the vertical in drilling, has caused several devices to come on the market to guard the driller against getting off the vertical. Most common of these devices is the Acid Bottle—dangerous to handle, slow and rather unsatisfactory in result. Other devices have followed, but not until the Sperry-Sun Well Surveying Company perfected the SYFO Clinograph can the problem said to have been solved in a way to satisfy the driller and producer.

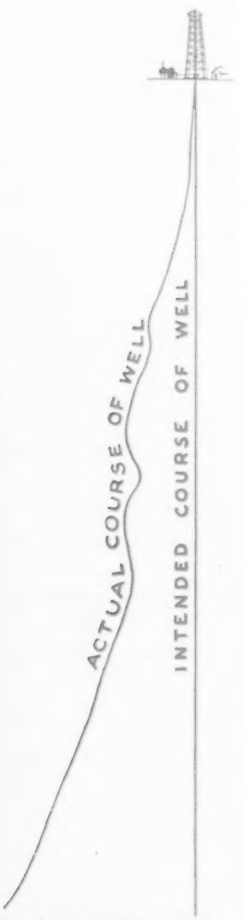
The operation of the SYFO is simple, the results obtained of great accuracy and can be read directly without computations. Being on paper these records can be filed for reference. A SYFO test is quick and the service most reasonable in cost.

The SYFO Clinograph represents a radical improvement in the design and method of operation of an inclination measuring instrument. Its advantages may be summarized as follows: It affords a *direct and accurate record*. The record is *easily obtained* without the use *of dangerous acids*. The test is *quickly* made. The record is on *paper* and can be *filed* for reference. *Ruggedly* built and will operate without decrease in efficiency. Operates on wire line running through the drill stem, or on sand or bailing line in open hole.



Running in a SYFO Clinograph takes very little time and the result can be read immediately.

The SYFO Clinograph is not sold, but leased at nominal rates. Being made in different sizes for different depths, it is necessary for the drilling company to advise the conditions under which the surveying will be done before quotation can be made.



Crooked holes involve many extra costs of drilling and operation in addition to the possibility of drifting out of pay sand.

Many operators are writing into their drilling contracts fixed limits from the vertical before accepting the completed well from the contractor. Record sheets from SYFO Clinograph tests should be used as evidence.

WRITE FOR COMPLETE DESCRIPTIVE LITERATURE

SPERRY-SUN WELL SURVEYING CO.

Main Office - 1608 Walnut Street

DALLAS PHILADELPHIA, PA. TULSA

Volume 57, No. 7 *May 2, 1930*

The OIL WEEKLY

A GULF PUBLISHING COMPANY PUBLICATION

Natural Gas Industry's Future Linked With Southwest

By H. J. STRUTH
Staff Economist

JUST as natural gas has played a most important part in the industrial development of the great Southwest, so will the unlimited possibilities of future supply within this area play an increasingly important part in the development of a greater natural gas industry. The potentialities indicated in Texas, alone, offers conclusive evidence to justify continued expansion of natural gas distribution facilities through an ever widening net-work of transmission lines in the United States. In fact, the producing area embracing Texas, Oklahoma, Louisiana and Arkansas represents a potential supply of natural gas of staggering proportions, that offers valid inducements to the investment of capital in a program of even greater expansion than has been witnessed thus far. Even a most conservative view of the natural gas industry's future cannot fail to signify a continued, healthy growth; a growth that will undoubtedly be rooted to the Southwest.

With the demand for natural gas, for both domestic and industrial use, limited only to the extent of distribution facilities, it is apparent that the developments of recent times are but the nucleus of a net-work of pipe lines that may eventually embrace all of the United States. As a matter of fact, 29 states are already listed as present or immediate prospective markets for natural gas. Some idea of the present scope of natural gas distribution facilities is gained from the accompanying map, Figure 1, showing the territory served by natural gas and present and proposed interstate sources of supply. The important part played by Texas, Oklahoma, Louisiana and Arkansas is readily apparent from the present and pros-

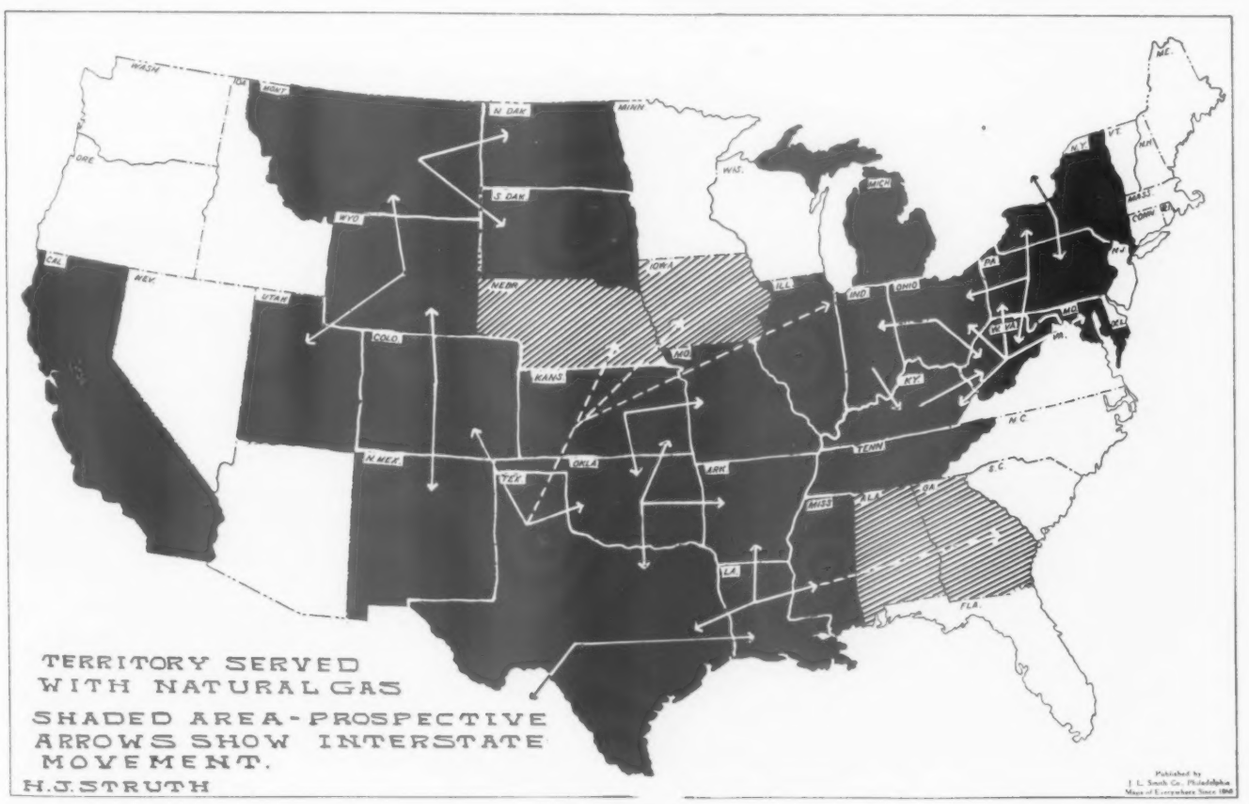


FIGURE 1

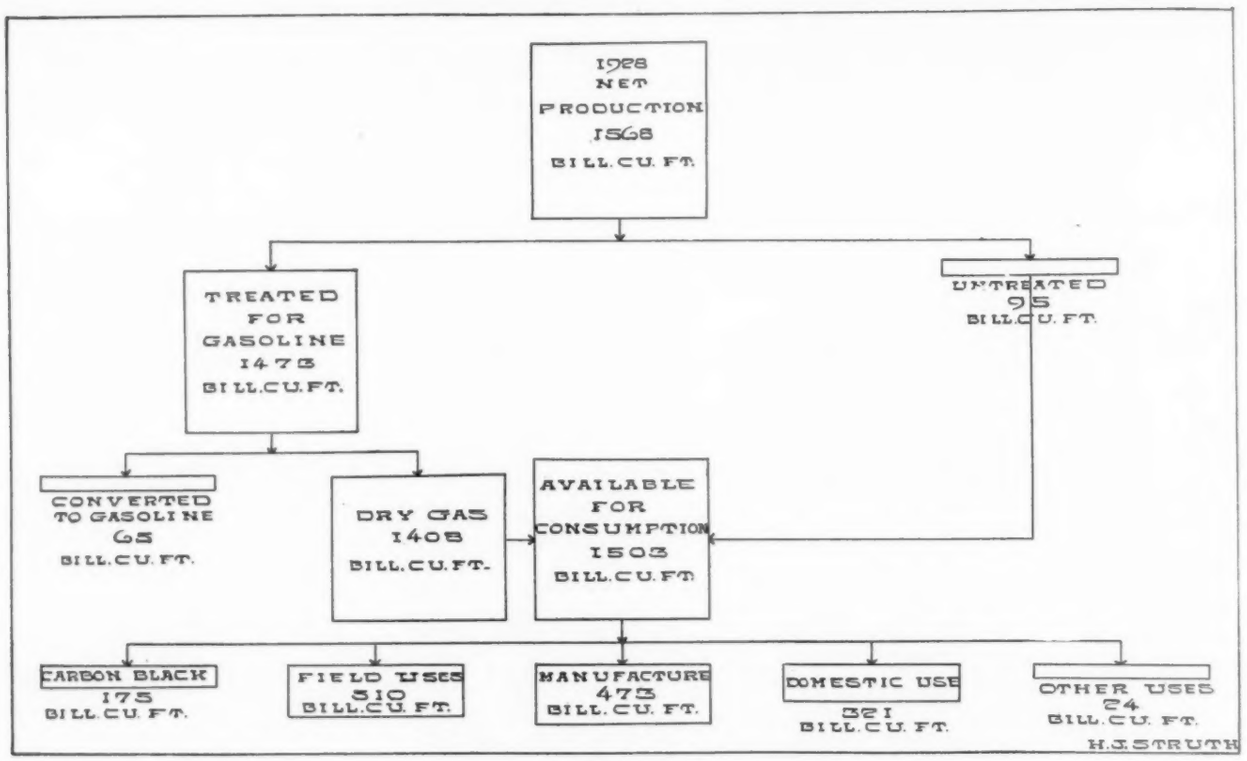


FIGURE 2

pective interstate movement to points of distribution.

The four states comprising the natural gas producing area of the Southwest were credited with a total marketed production for the year 1928 of 870,907,000,000 cubic feet. This represented 55.5 per cent of the total natural gas production of the United States. While these states are large consumers of natural gas, they are also important sources of supply for surrounding states. During 1928 the interstate movement of natural gas from these states aggregated 99,123,000,000 cubic feet. Of this amount, 40,574,000,000 cubic feet was transported to Mississippi, Kansas, Colorado and Mexico.

Long distance transmission lines completed and projected, particularly from Texas and Louisiana, have greatly accelerated the movement of natural gas and will undoubtedly constitute a future volume of outside business that will exceed that of West Virginia. The latter state distributed 106,098,000,000 cubic feet of natural gas during 1928, continuing to hold first place as the largest shipper of gas to points beyond its own borders.

Texas' Growth Rapid

Texas has perhaps recorded the most phenomenal growth in the production and utilization of natural gas. Since 1919, this state has revealed a growth in marketed production of more than 1200 per cent; in other words, the quantity produced in 1928 proved to be 12 times as large as the production recorded in 1919. During this period, Illinois, Ohio, New York, Pennsylvania and West Virginia exhibited marked declines on marketed production. West Virginia ranked first in natural gas production in 1919, while Texas held seventh place. Today, West Virginia is fifth in rank while Texas holds first place. In 1928, Texas natural gas production was exceeded only by Oklahoma, by a margin of less than 20,000,000,000 cubic feet. Subsequent developments since then have undoubtedly placed Texas first as the nation's largest producer of natural gas.

Estimates of natural gas production for 1929, prepared by the writer, reveal that there was produced in the United States an aggregate volume of 1,900,000,000,000 cubic feet. Of this quantity, Texas apparently produced about 450,000,000,000 cubic feet, or nearly 24 per cent of the national total; placing it first, Oklahoma second and Louisiana third. On the basis of natural gasoline requirements for this year, the writer estimates a necessary natural gas production of 2,100,000,000,000 cubic feet, although it is believed that actual production will somewhat exceed that amount. This assumption is predicated upon the belief that fuel-gas requirements will be augmented to a considerable extent with the completion of additional transmission projects. In view of the prolific sources of supply existing in the Southwest, the question of future production is one decided only by the pipe line outlets available. Thus, it becomes rather difficult to estimate future production, although it is not difficult to realize what the present and prospective program of expansion will mean in the way of increased production.

Widely Distributed Now

The extent of future utilization of natural gas can be more readily appreciated when we consider the possibilities of long distance transmission. Plans now being consummated and others under discussion and study indicate that it may not be many years until practically all of the United States will be enjoying the advantages of natural gas service. Even now, in the absence of pipe line facilities, natural gas is being distributed to distant consuming points in containers and also in high pressure tank cars. The latter practice is already in force on the Pacific Coast where natural gas is being shipped in tank cars from California to Washington and Oregon. Similarly, natural gas produced in the Mid-Continent area is being shipped in containers to points far removed from the source of supply, particularly to rural communities. It has also been ascertained from reliable sources that the near future will witness the building of lines from Wyoming to Idaho and Oregon, distributing natural gas to most of the large cities of the Northwest. This, in combination with tremendous possibilities of further expansion in California, suggests that the entire Pacific Coast area will eventually be supplied with natural gas. In the case of the Southwest, even greater possibilities are suggested. The fact that it has been found feasible to pipe natural gas from the Texas Panhandle to Chicago, presents a vivid conception of the future scope of this public service. Given an adequate future supply, it will undoubtedly be possible to pipe gas from Texas to such cities as New York, Philadelphia, Boston, Baltimore and Washington, D. C.

Some idea of the tremendous future

supply of natural gas available in Texas alone, can be gained from the fact that four gas producing areas there show capabilities of producing about 18,000,000,000 cubic feet daily. This quantity of gas is sufficient to supply the total requirements of the United States for at least four years, without drawing upon the supply available in any other state. If all this potential production during only one year could be stored, it would be sufficient to supply all gas requirements of Texas for a period of 20 years! If we include the potentialities of Louisiana, Oklahoma and Arkansas, it becomes apparent that this area is capable to supplying the entire eastern half, if not all, of the United States with natural gas for many years hence. It is the dependability of this huge supply that not only makes possible the realization of pipe lines 900 or more miles long, but also offers inducements to build extensions that will eventually embrace every important city east of the Rocky Mountains.

Industrial Use Unparalleled

While the demand for natural gas for domestic utilization continues to grow by leaps and bounds, its use in the industrial field remains unparalleled. Figure 2 presents a graphic view of the utilization of natural gas during 1928. Beginning with production of 1,568,000,000,000 cubic feet, the chart traces the course of this volume to its ultimate disposition. It will be noted that uses are indicated in direct proportion to total production which represents 100 per cent. This facilitates ready appreciation of the extent of various uses. With the exception of 65,000,000,000 cubic feet converted to natural gasoline and 175,000,000,000 cubic feet converted to carbon black, practically all of the marketed gas production is utilized as fuel. This means that 1,328,000,000,000 cubic feet of natural gas was utilized as fuel in 1928. A comparison of the growth of domestic and industrial consumption since 1919 reveals material gains for both, while the increase in number of domestic consumers has exhibited remarkable forward strides. Table 1 furnishes an interesting comparison:

TABLE 1

Year—	Number of Domestic Consumers (Thousands)	Total Domestic Consumption (Billions Cu. Ft.)	Total Industrial Consumption (Billions of Cu. Ft.)
1919	2,501	256	490
1920	2,615	286	512
1921	2,631	248	414
1922	3,015	255	508
1923	3,234	277	730
1924	3,443	285	856
1925	3,508	272	916
1926	3,731	289	1,024
1927	3,984	296	1,149
1928	4,366	321	1,247

The availability of natural gasoline production figures through the Bureau of Mines reports, plus the fact that approximately 94 per cent of all natural gas produced is treated for the recovery of gasoline, makes possible an accurate estimate of natural gas production. According to the February report of the Bureau of Mines, natural gasoline production for the first two months of the year aggregated 363,600,000 gallons. On the basis of a recovery of 1.23 gallons of gasoline per thousand cubic feet, it is apparent that about 295,000,000,000 cubic feet of gas was treated during the first two months of this year. On the basis that this represents 94 per cent of the total gas production, we find that the probable total output of natural gas aggregated 314,000,000,000 cubic feet, or a monthly average production of 157,000,000,000 cubic feet. The growth suggested for natural gas production in future years is a most important factor in connection with the growing demand for motor oil. While there is a possibility that treating a major portion of the gas produced for the recovery of natural gasoline may, at times, result in over-production of that product, it is believed that the trend toward increased manufacture of cracked gasoline will justify further expansion of the natural gasoline industry. This, of course, is dependent upon conditions at the refineries as well as the status of the crude oil situation. At any rate, the natural gas and natural gasoline industries are closely allied and increased production of natural gas must be accomplished by increased facilities for the manufacture of natural gasoline.

Growth Rapid Since 1921

A review of the development of the natural gas industry from its inception, dating back to 1860, reveals that the total production since the year 1921 exceeded the entire output of the industry prior to that date. The remarkable gains recorded in production during the past eight years recalls the predictions made in 1921, to the effect that the production of natural gas had reached its peak and would stage a rapid decline. These predictions were prompted by the fact that natural gas production in the Eastern States of Pennsylvania and West Virginia had exhibited severe declining tendencies, resulting in a total decline for the United States in 1921 of 137,000,000,000 cubic feet. At that time little, if any, thought was given to the possibility that natural gas existed in huge quantities in Texas. Gas was produced there in small quantities and in somewhat larger quantities in the states of Oklahoma, Louisiana, Arkansas and California. It was little realized, however, that these states would figure so prominently as sources of the nation's supply at a later date.

Figure 3 shows the trend of natural gas production in the United States since the year 1919. The white curve shows also how the demand for domestic purposes has grown. Events subsequent to the decline shown in 1921, have wrought remarkable changes in the industry. Considering the age of the natural gas industry, it can truly be said that it has been made young again through the agency of a veritable "fountain of youth." This rejuvenation is directly attributed to the developments that have taken place in the great Southwest. The status of the Southwest as a source of natural gas supply is perhaps best shown by Table 2, comparing the accumulated production of the five years ending with 1928, together with the total produced by West Virginia during this period.

TABLE 2

Oklahoma	1,397,883,000,000
Texas	973,564,000,000
Louisiana	885,770,000,000
West Virginia	868,246,000,000
Arkansas	172,745,000,000

Texas to Lead

Succeeding years will further alter this picture by placing Texas foremost and

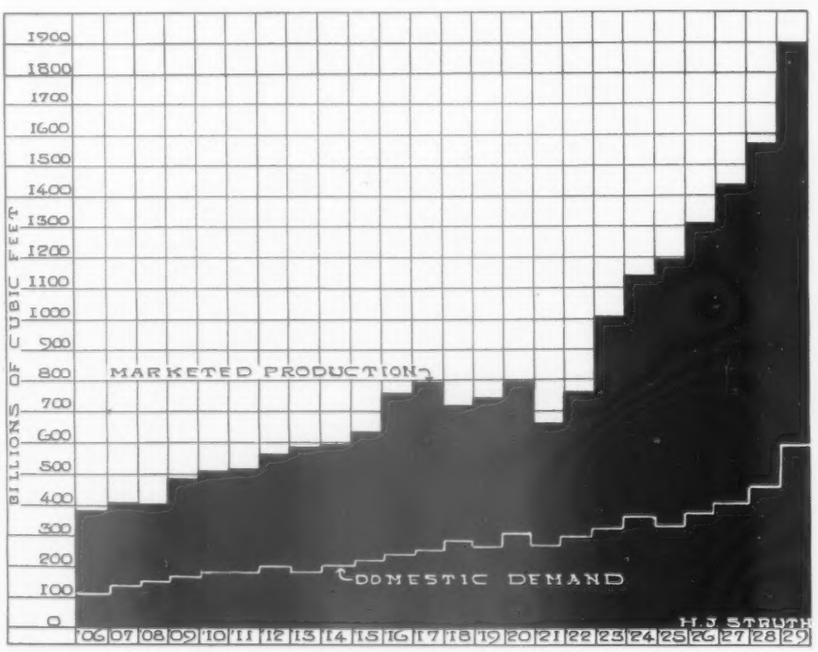


FIGURE 3

West Virginia will undoubtedly continue to become less important as a source of outside supply. In the interium, gas produced in the Southwest will continue to supply an increasingly larger area and will no doubt become the chief source of supply of the Central West. West Virginia gas will undoubtedly continue to be an important factor in Kentucky, Maryland, Ohio and Pennsylvania, but the declining tendencies experienced will naturally prevent any further expansion in that territory. It remains, therefore, for the Southwest to continue to exploit the enormous possibilities offered in both old and new consuming centers.

Table 3 presents a balance sheet of the natural gas industry, by states, for the year 1928. This shows for each state the quantity of natural gas produced, gas received from other states, gas consumed and delivered to other states.

West Virginia Largest Supplier

The balance sheet of the natural gas industry shows that West Virginia is the largest supplier of gas to outside states. It also shows that Ohio is the largest importer of natural gas, production of the state being considerably below actual requirements. Texas leads all states in consumption of natural gas, being the only state that is now entirely without manufactured gas facilities. In this connection, it is significant to point out that a greater part of the distribution facilities in Texas have been completed during the last few years. The completion of a trunk line to El Paso during 1928 marked the passing of manufactured gas in this state.

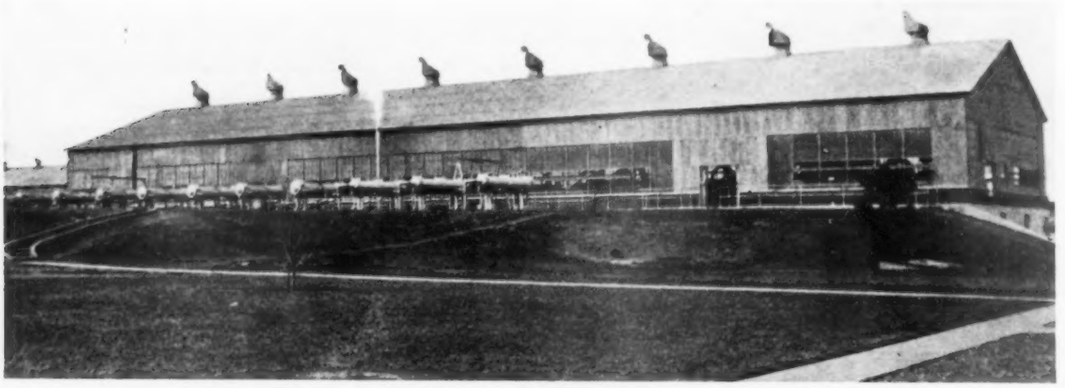
Future developments will undoubtedly witness a more intensive degree of lateral pipe line construction that will gradually embrace a considerably wider range of territory. The completion of trunk lines to distant points will no doubt offer numerous opportunities to extend natural gas distribution facilities to additional hundreds of communities within the respective states traversed by these main lines. What this will mean to the Southwest can be readily appreciated. A look forward cannot fail to convey the idea that the natural gas developments of the recent past are but the beginning of a program of expansion that will place the industry in the forefront among the leaders of the industrial world. With such a bright outlook, dependent to a marked degree upon the availability of an adequate natural gas supply from the Southwest, it is a foregone conclusion that the states comprising this immensely productive gas area cannot fail to experience continued rapid growth in point of population as well as industrial importance.

TABLE 3

Natural Gas Balance Sheet— Year 1928

(Millions of Cubic Feet)

State—	Production	Imports	Consumption	Exports
Arkansas	20,235	17,528	37,763	....
California	246,215	....	246,215	....
Colorado	2,931	3,717	6,347	301
Illinois	3,051	....	3,051	....
Indiana	1,290	1,351	2,259	382
Kansas	45,644	36,669	72,671	9,642
Kentucky	15,383	7,575	15,802	7,156
Louisiana	227,821	3,461	188,755	42,527
Michigan	469	....	469	....
Missouri	360	9,406	9,766	....
Montana	6,277	1,226	7,265	238
New Mexico	838	16	854	....
New York	7,224	10,778	17,918	84
Ohio	56,341	68,130	122,484	1,987
Oklahoma	320,861	7,025	285,333	42,553
Pennsylvania	99,466	31,833	116,150	15,149
South Dakota	54	160	214	....
Texas	301,990	30,771	318,718	14,043
Utah	1,105	....	1,105	....
West Virginia	163,018	10,352	67,272	106,098
Wyoming	47,490	285	46,549	1,226
Other States	76	943	1,019	....
Total United States	1,568,139	241,226	1,567,979	241,386



Magnolia Gas Company's gas compression station at Latex, Texas

PROGRAM

OF THE

NATURAL GAS DEPARTMENT

American Gas Association Convention

TO BE HELD AT

ROOSVELT HOTEL, NEW ORLEANS, MAY 5, 6, 7 *and* 8, 1930

Tuesday, May 6, 9:30 A.M.

Invocation—Reverend Father P. M. H. Wynhoven, Gretna, Louisiana.

Address of Welcome—Mayor T. Semmes Walmsley, New Orleans, Louisiana.

Address of the Chairman—H. C. Morris, Dallas Gas Company, Dallas, Texas.

Address—Natural Gas, America's Newest Giant—B. J. Mullaney, Peoples Gas Light and Coke Company, Chicago.

Address—Alexander Forward, American Gas Association, New York.

Paper—Commercial Sales—F. M. Rosenkrans, Gas Service Company, Kansas City.

Wrinkles—H. J. Hoover, Cincinnati.

Collecting Natural Gas Statistics—R. W. Gallagher, East Ohio Gas Company, Cleveland.

Tuesday, May 6, 1:30 P.M.

Natural Gas Fellowships—J. B. Tonkin, Peoples Natural Gas Company, Pittsburgh.

Paper—Natural Gas Developments on the Pacific Coast—W. S. Yard, Pacific Gas and Electric Company, San Francisco.

Our Main Technical and Research Committee—H. C. Cooper, Hope Natural Gas Company, Pittsburgh.

Gas Measurements—T. R. Weymouth, Oklahoma Natural Gas Corporation, Tulsa.

Pipe Line Flow—H. D. Hancock, Henry L. Doherty and Company, New York City.

Gas Well Delivery Capacities—N. C. McGowen, Louisiana Gas and Fuel Company, Shreveport.

Paper—Leak Detection and Prevention in Congested Cities—Dr. J. B. Garner, Peoples Natural Gas Company, Pittsburgh.

Wednesday, May 7, 9:30 A.M.

Paper—Pipe Protection—George Wehrle, Public Service Company of Colorado, Denver, Colorado.

Paper—Building Domestic Load by Selling Appliances—W. J. MacIntyre, Southern Cities Distributing Company, Shreveport.

Paper—Conservation in Louisiana—Dr. J. A. Shaw, Department of Conservation, Shreveport.

Paper—Home Service—Miss A. Berry, San Antonio Public Service Company, San Antonio, Texas.

Paper—Activities of a Public Relations and Advertising Department—R. E. Haas, Columbia Gas and Electric Corporation, New York City.

Wednesday, May 7, 1:30 P.M.

OPEN FORUM

J. D. Creveling, Henry L. Doherty and Company, New York City, New York, will preside.

The following subjects, and others, will be open for general discussion:

1. Handling Water in Wells—Discussion Leader, J. H. Dunn, Lone Star Gas Company, Dallas.
2. Recent Progress in the Saturation of Natural Gas with Oil and/or Water—Discussion Leader, H. L. Gairy, New Orleans Public Service, Inc., New Orleans.
3. The Relative Advantages of Displacement and Orifice Meters—Discussion Leader, George B. Sheppard, United Gas Company, Houston.
4. How to Build Up Load in Southern Climates with a Large Percentage of Colored or Foreign Population—Discussion Leader, L. E. Vogelsang, San Antonio Public Service Company, San Antonio, Texas.
5. Selling Gas for Househeating with Straight Gas and Conversion Units—J. J. Brennan, Memphis Power and Light Company, Memphis, Tennessee.

Thursday, May 8, 9:30 A. M.

A Uniform Classification of Accounts—E. N. Watkins, Arkansas Natural Gas Corporation, Shreveport.

Paper—Application of Degree Day Defficiency to Computing Domestic and Heating Loads—R. M. Redding, Dallas Gas Company, Dallas.

Paper—Gas Field Studies—E. L. Rawlins, U. S. Bureau of Mines, Bartlesville, Oklahoma.

Paper—Development of Larger Industrial Sales—W. M. Little, Cities Service Gas Company, Bartlesville, Oklahoma.

Main Technical and Research Committee Meeting—Monday, May 5, at 10:30 A.M.

Meeting of Managing and Advisory Committees—Monday, May 5, at 5:30 P.M.

General Entertainment—Monday and Wednesday.

Ladies' Entertainments—
Monday, Tuesday and Wednesday.

Beyond the Range of the Gas Mains

By B. V. ELLZEY
Staff Representative

IF you think that gas cannot be had beyond the ends of the city gas mains, get acquainted with *liquefied natural gas*. It will do everything that natural gas will do; is easy to install; simple and harmless in operation; and not unreasonably expensive.

The above, in a few words, is the argument of a dozen or more of companies manufacturing and selling this new fuel, which already is available in all parts of the country.

It has been only a few months since liquefied natural gas was offered commercially, but in that time many of the leading gas companies have perfected the product to be manufactured under their own trade names, and the remainder of the companies having natural gas production are experimenting with the product in the laboratory and refinery.

Some of the leaders in this field are: Skelly Oil Company, whose product is called "Skelgas;" Phillips Petroleum Company, with "Philgas;" Standard Oil Company of California, with "Flamo;" Carbide and Carbon Chemical Corporation, with "Pyrofax;" Delco Light Company, with "Delcogas;" Lone Star Gas Company, with "Stargas," and others. A corporation has just been announced, to be known as the Philokla Gas Company, being a combine between Oklahoma Natural Gas and Phillips Petroleum Company, to manufacture the new household product from gas produced in the Oklahoma City oil field.

This form of natural gas is adaptable especially to small towns and rural communities, where the possibilities of natural gas pipe line service are remote. "Where the gas main stops, this product starts," in the words of one manufacturer. In every State there are thousands of homes not served by gas, providing a tremendous market for liquefied gas, and the early plans of the manufacturers indicate that they are perfecting their sales connections, and merchandising plans with a vigor, appreciating the importance of being the first to make connection with the prospective customer.

What It Is

Liquefied natural gas in most instances is a by-product of natural gasoline, which, in turn, of course, is extracted from the raw natural gas taken off at the casing head. It is classed as a by-product because its separation from the natural gasoline improves the latter product, making it more stable as a motor fuel.

Raw natural gasoline contains the full scale of petroleum hydrocarbons, the same of other gasoline, but in a different proportion, there being an excess of the highly volatile fractions with low boiling temperature. These have a tendency to escape from the liquid, reverting to their vapor phase, and to fly away into the air. As a matter of fact many manufacturers of natural gasoline in the past have stabilized and improved their product by this natural process, and the "weathering" of natural gasoline has been common practice for years.

These light fractions of the gas, referred to facetiously as the "wild men" of the hydrocarbon series, include the butane, ethane, methane, and propane units. Their low boiling temperature and volatility causes them to ignite more quickly in a combustion chamber, going off, as a rule, under the heat of the motor before the spark enters the chamber, and resulting directly in the detonation, or knock, which is familiar to automobile technicians. A great deal of money has been spent in perfecting counter-agents to this pre-ignition tendency caused by these "wild men" in gasoline, for their presence is found to a greater or less degree in all gasolines.

The low boiling range of the butane, ethane, methane and propane hydrocarbons makes it an easy matter to separate them out of the gasoline or out of the raw gas taken off at the casing head. They vaporize quickly and yield readily to condensation at a low temperature. In liquid form they are confined into high pressure cylinders for commercial distribution.

The different trade-marked products being offered may differ widely in the proportion of the different fractions of these light hydrocarbons constituting the finished product. The manufacturing processes vary, also, depending upon the nature of the gas as it comes from the well, and the chemical formulae of the desired resultant products.

H. H. Roberts of the Standard Oil Company of California, speaking of Flamo, said:

"For several years past the Standard Oil Company of California has engaged in research and investigation on the possibility of placing a liquid petroleum gas on the market and are now confident that a satisfactory product has been developed in Standard Flamo. Standard Flamo is the cream of natural gas confined in cylinders

Demonstration truck carrying Stargas to rural residents to show them how it works

ready for instant use. It is not a gasoline but is actually a dry gas burned in any household in the same way that city or natural gas is burned. It is listed by the underwriters' laboratories as one of the safest types of fuel and superior to oil and gasoline as used in stoves. Two cylinders, a neat, locked cabinet for housing them, reducing valves and gauges constitute Flamo equipment ready to hook up to cook stoves, water heaters, gas lights, room heaters, gas refrigerators and other gas appliances.

"Whenever a burner or gas jet is opened in the house it automatically releases the pressure in the cylinders through suitable valves and the liquid vaporizes to form a dry gas which passes through the reducing gauges and thereby supplies uniform pressure in the home.

"Standard Flamo makes available city gas conveniences to any person who may desire it regardless of whether his dwelling is located in the city or country.

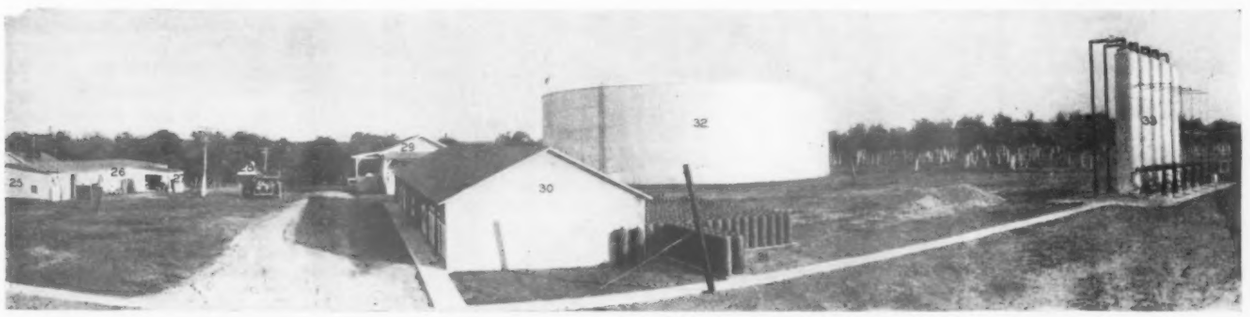
Heat Efficiency

"In terms of B.t.u.'s, one pound of Standard Flamo is approximately equivalent to 6.3 kilowatt hours of electricity. One cylinder of the gas approximates the heat value of 600 kilowatt hours. One pound of Standard Flamo is equivalent in heat value to approximately 40 cubic feet of manufactured city gas, and one cylinder of Standard Flamo equals in heat value approximately 4000 cubic feet of manufactured city gas.

"Standard Flamo is found to be more economical than electricity, depending somewhat, of course, on the variation in electric rates. Its convenience, efficiency and cleanliness justify its use in any modern home beyond the gas mains.

"The Flamo equipment is simply loaned, installed and maintained by the Standard Oil Company of California on a small down payment which covers the upkeep charges. A lesser quantity of this gas is required to do a definite amount of cooking or heating than with manufactured gas. For this reason, it is desired that gas equipment used with this product be especially adapted with smaller orifices and properly designed burners. The burners are usually set closer to the utensils than is the general practice with ordinary city gas stoves.

"Many of the stove manufacturers are now equipping their stoves especially for the use of Standard Flamo. The Standard



The Gordon plant of the Lone Star Gas Company, where "Stargas" is made

Oil Company of California maintains a testing laboratory at Santa Fe Springs, California, where all gas appliances are tested and must meet a certain standard of efficiency and suitability for the use with the product before their field men will connect a standard Flamo set to the gas appliances.

"There is a wonderful possibility for the future market of liquefied petroleum gas and whether the market of the future 'makes or breaks' is dependent upon the economy and satisfaction to the householders. For the future welfare of the industry, the company refuses to connect its equipment to other than approved ranges and gas appliances. One cylinder of Standard Flamo contains enough liquid to supply gas to an average stove burner for approximately 300 hours. It is estimated that this would be sufficient to care for the cooking requirements of a family of four or five people for a period of more than a month, depending, of course, upon the usage. Many families have used from the same cylinder for considerably longer periods. It is estimated that the cost is less than three cents per burner hour for cooking purposes in the State of California.

"Standard Flamo is clean, free from water and other foreign matter. The individual household set with its individual regulator unit insures a constant pressure at the customer's appliance equivalent to a 10-inch water column. Therefore, this home gas plant furnishes all of the conveniences of the city gas. The pressure in the tanks is no greater than the pressure of natural gas frequently retained in storage tanks for city distribution. A safety device in the form of a mercury seal provides a protection so that at no time will the pressure ever exceed one pound in the supply lines to the gas appliance in the home.

"The pressure served to the appliance from Standard Flamo equipment is approximately the same as city gas and it should be understood that Standard Flamo as delivered to the appliance is entirely a dry gas and not a liquid.

Characteristics

"The following is a table which gives the approximate characteristics of Standard Flamo, together with certain comparative data relative to its fuel value, with regard to other standard fuels:

Liquid—		
Specific gravity....	.52	degrees
A.P.I. gravity	140.0	degrees
One gallon	4.35	pounds
Specific gravity gas (air equals 1)	1.50	
One pound Flamo ...	8.5	ft. gas (Flamo)
One gallon Flamo ...	37.0	ft. gas (Flamo)
One cylinder	780.0	ft. gas (Flamo)

Heating Value

	B.t.u.
One pound	21,500
One gallon (liquid)	93,500
One cubic foot (gas)	2,550

Note—One pound Flamo equals approximately 39 cubic feet (550 B.t.u.) manufactured gas. One pound Flamo equals approximately 6.3 kilowatt hours electricity (one kilowatt hour equals 3415 B.t.u.). One gallon Flamo equals approximately 160 cubic feet (550 B.t.u.) manufactured gas. One gallon Flamo equals approximately 29 kilowatt hours electricity (one kilowatt hour equals 3415 B.t.u.); 25.6 pounds Flamo equals approximately 1000 cubic feet (550 B.t.u.) manufactured gas.

In selling liquefied natural gas, advantages seem to accrue to the company which already has developed a sales organization and intimate contacts with the market which will have to be cultivated for the disposal of this product. In this respect the oil companies with retail sales organizations and wholesale distributing plants, as well as utility concerns which have developed and marketed household appliances on a big scale basis, appear to have the inside track. Particularly advantageous is said to be the position of the Delco Light Company, with its Delcogas, and the Carbide and Carbon Chemicals Corporation, with Pyrofax. Both concerns have long years of experience in marketing products which will be handled very similarly to liquefied natural gas.

Delco Uses Pentane

In choosing pentane the Delco Light Company has selected a product of substantially different specifications which is reflected in sources of supply, the method of transportation and manner of utilization by the consumer. The specifications of products sold as pentane will vary somewhat but in general the gravity is from 93 to 95 A.P.I. It has an initial boiling point of 80°F. and an end point of 100°F. and weighs around 5¼ pounds per gallon.

The B.t.u. content is approximately 4000 per cubic feet or 110,000 B.t.u. per gallon. This B.t.u. content compares with 2500 per cubic foot for propane and 3200 for butanes.

Due to the lower gravity and vapor pressure the transportation of pentane is much simplier than in the case of propanes and butanes. The latter two liquefied fuels require expensive tank cars of special design for bulk transportation and this situation is reflected in the care of handling in steel cylinders and other containers at consuming points. Only the ordinary care taken in handling the light gasoline fractions is necessary in the case of pentane.

Method of Installation

In regard to the installation the following description is taken from the announcement of the Delco Light Company:

"Delcogas is composed of three units—(1) the compressor, (2) the fuel storage tank, (3) the regulator.

"The compressor consists of a one-sixth horsepower electric motor, an endless V-belt drive from the motor, the air compressor, an automatic switch controlling the operation of the entire equipment, an oil reservoir, and an air reservoir or air storage tank. The fuel storage tank is a large container for the liquid fuel, which is buried at least five feet underground, 10 feet or more from the user's house. This underground location of the fuel tank assures a uniform temperature of the fuel.

"The regulator is a simple mechanism for controlling the gas pressure, and creating a positive and unvarying pressure of gas at the cooking or heating appliance in the home. The compressor unit is simple in design and construction, with a minimum of moving parts. It does not require frequent attention, because it has been built expressly with the thought that there shall be nothing to get out of order. It is ready for operation the instant gas is needed.

"Tanks for containing the liquid fuel from which vapor gas is made are supplied in three sizes. The initial requirements of liquid fuel are supplied the user without additional cost at the time he installs Delcogas.

"Briefly, Delcogas operates in this manner. The compressor runs, building up the small required air pressure in the fuel storage tank, buried underground. This pressure causes the liquid to throw off a gas which has all the properties of the best city gas. This vapor gas is then carried from the underground storage tank to the appliances in the home where it is used exactly as city gas."

Carburetion Process

From this description it is apparent that the change from liquid to gas is based on a carburetion process. This is necessary because, unlike propane, the pentanes would not readily gasify except at temperatures in excess of 100°F.

Since pentane is available from both natural gasoline manufacturers and refiners the supply is practically unlimited. However, those who have made a study of this feature of the development point out that in taking the pentane cut from either refinery gasoline or natural gasoline, a fraction desirable as motor fuel is removed.

This is interpreted to mean that any large utilization of pentanes as liquefied fuels might mean that the sellers would have to secure a price which would offset the additional cost due to the fact that it is a desirable fraction of motor fuel.

Cost of Gas

Regarding the cost to the consumer the official announcement of the Delco Light Company states:

"Delcogas can be piped to any point up to 1000 feet distant from the compressor, making gas service available in other buildings as well as in the home.

"City gas rates range from 50 cents per 1000 cubic feet to as high as $3.20. Compared to the average cost of city artificial gas, Delcogas is no higher. The average cost of city artificial gas in the home is $4.50 a month. The average monthly cost of operating Delcogas in an average home is also $4.50. Tests show an average breakfast may be prepared with Delcogas at a fuel cost of two cents. An average dinner was prepared under test at a fuel cost of 6½ cents."

Liquefied natural gas is not being offered now as a competitive product for natural gas. It is in competition with manufactured gas. But the methods of distribution are said to make the final cost of the fuel higher than that of natural gas delivered from a city main. Further developments and an increased demand for the new products may bring the price down to a level of that of natural gas.

Already national sales campaigns are under way, on several of these brands of gas. That the market will develop into one of considerable volume is expected by most of the manufacturers.

New Hydraulic Brake Has Positive Action

By BRAD MILLS
Staff Representative

A NEW type of anti-friction brake, which is particularly adaptable to drilling wells, has been designed by Dr. J. S. Rickard of Bellflower, California. Although the new brake employs a hydraulic action, it incorporates an entirely new principle, having perhaps the greatest braking power per pound of weight of any model yet designed. The simplicity of the brake and its flexibility give it a wide range of uses in oil field operations.

The brake consists of two gears of special design, an oscillating guide and a heavy lubricating fluid, all enclosed in an airtight case. One gear is attached to the load shaft, the other gear is idling when the brake is off, but changes into a resisting gear when actuated by the oscillating guide, which in turn is manipulated by a foot pedal or lever. It is also possible to actuate the guide by other forms of power, such as electricity, steam or compressed air.

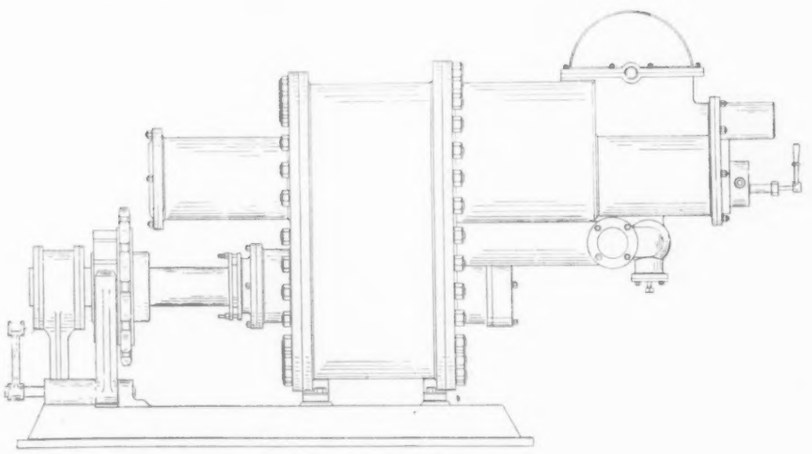
The resistance, or brake effect, is generated by the hydraulic action of the fluid upon the tooth surface of the gears, the brake effectiveness or intensity being in direct proportion to the amount of tooth surface of the idling gear, as applied to the load shaft and thus exposed to the action of the fluid. Consequently, by proper actuation of the pedal or lever, the brake effect can be applied to any degree from zero to deadlock.

One of the advantages of the new brake is the small number of moving parts and the resulting absence of various complications. The only moving parts are the gears and guide, all of which are operating in a complete bath of oil. It is claimed that the brake will outlast any piece of equipment to which it is attached. Although the greatest strain is confined to small chambers formed by the gear teeth, the case is heavy enough to allow a wide safety margin.

A more detailed description of the action of the brake when it is in actual service probably will serve to illustrate the principles employed so the average layman can understand at least the general design.

When the lever operating the brake is applied, the negative side of the by-pass closes and the positive or pressure side is opened. The pressure is inserted into the rear of the idle gear, applying brake. To release the brake, close the positive or pressure side and this returns the pressure to the negative side, disengaging the gears by forcing the idle gear out of mesh. This arrangement applies to the smaller models.

The gears do not completely disengage, but so nearly do so that there is no "drag." When the idle gear is disengaged, the driving gear circulates the oil at the end of the idle gear. By falling back into the cylinder, the idle gear is free and out of the way. As the gears gradually engage, more oil is trapped by the teeth and a greater braking power generated, the intensity depending upon the degree of mesh of the special gears.



New type hydraulic brake

The gears are machined to fit closely on the ends to prevent "creeping" when the brake is applied. By machining these ends and fitting the gears accurately into the case, the film of oil is sufficient to eliminate more than 90 per cent of the "creeping" or leaking through, experienced with ordinary gears.

Eight-point gears are used, the teeth being so designed that at least four holding points keep the fluid trapped within the recesses of the gear teeth. The clearance of the teeth while the gears are revolving is small. As the teeth, in turning, allow the fluid to escape, more is trapped as the teeth continue to engage.

A safety "dog" is used to prevent creeping when the load is to be held for a long period. This feature eliminates the possibility of damage in case of a shutdown or when casing is being run. When the machinery is started, the next tooth automatically kicks the dog out of place, preventing damage through carelessness.

The braking power of the larger models is so great that possibility of snapping a wire line is eliminated through the incorporation of a relief valve, which allows a leaking through of the fluid. This valve may be adjusted to "cut in" well ahead of the danger point. When the valve is functioning, the fluid is by-passing from the positive or pressure to the negative side of the pump. The relief valve may also be used as a dummy driller by adjusting it to feed the drill pipe at any desired speed. It is claimed that this practice will be an aid to straight drilling.

The brake may be operated by water, steam, electric or hand power, or by its own hydraulic power. Its action may be controlled at several points in the derrick. This arrangement was made so that in case of emergency the man nearest to a control may apply the brake. It is practical to place a control so that the derrick man may apply the brake in case of emergency.

The brake for use on drilling wells will weigh about 2500 pounds complete. It may be located either on the derrick floor or in the cellar and may be attached to the shaft by chain or gear or in a direct manner.

A special heavy fluid is used, having been adopted because it will not become thin when heated. This quality makes the brake as efficient with hard usage as with occasional application. Early models used castor oil and flake graphite, but this fluid has been discarded.

The exterior of the case is finned for air cooling, but has water jackets as well. Water is circulated in the same manner as in an automobile motor.

A 94-foot steel derrick has been erected for experimental purposes. A large boiler will be suspended inside the derrick, filled with slack and used for testing the brakes. Company engineers claim that a load which whould require two men to stop with ordinary mechanical brakes may be checked by applying a few pounds with only three fingers. Regulation drilling lines and equipment will be used so that actual oil field conditions may be met.

Are American Standard Pipe Taps Suitable for A. P. I. Line Pipe?

By S. B. TERRY

Assistant Manager, Gage Division, Pratt and Whittney Company

THERE has been some discussion as to the possibility of using the customary American Standard Pipe Taps to thread A. P. I. line pipe couplings. In order to show the merits or demerits regarding the use of American Standard Pipe Taps the following sketch and table have been prepared.

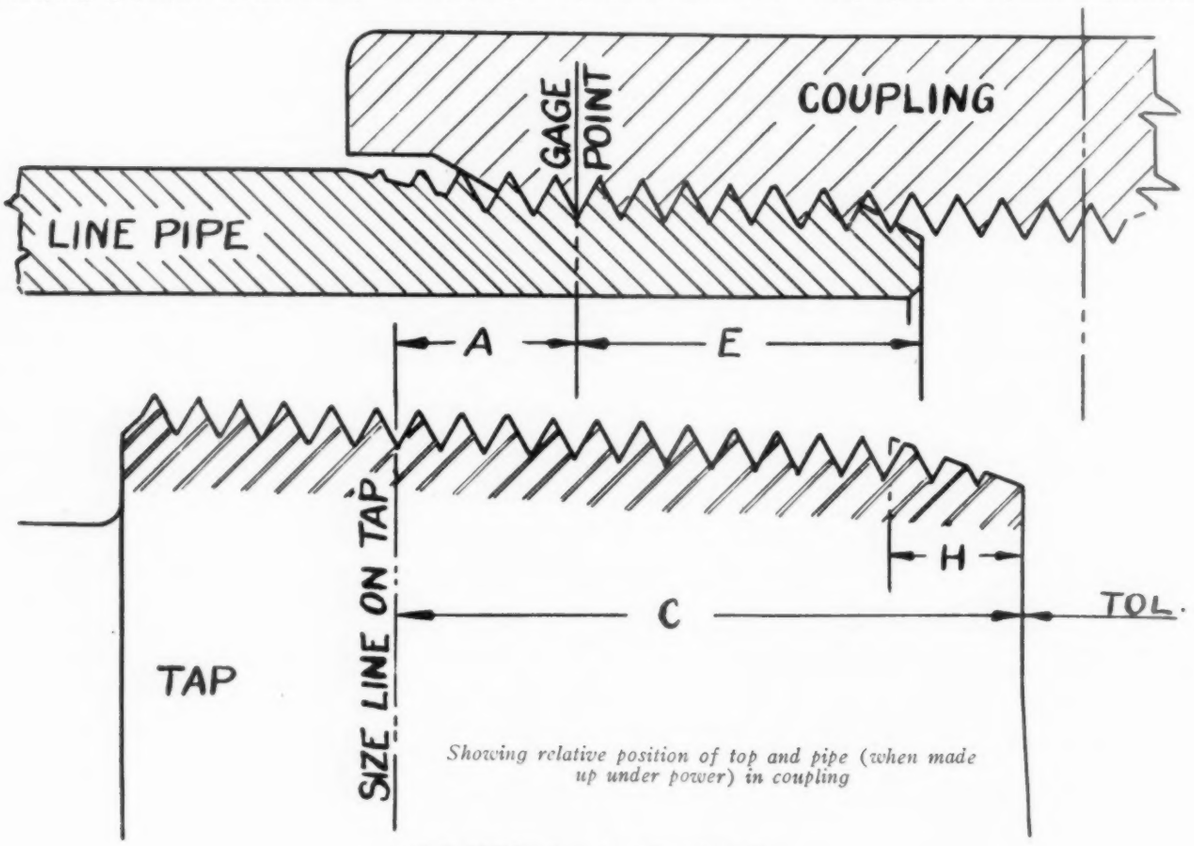
It is the practice of some pipe mills to allow four turns to make up pipe and coupling by power. In case this is considered excessive the table has been prepared to also show the condition when three turns are allowed for power make up.

In threading line pipe and coupling, the pipe thread is cut basic plus or minus the allowable gaging tolerance and the coupling is threaded small to allow for the turns required to make a satisfactory joint by power. This means that the tap must stand out from the coupling an equivalent amount, assuming of course that the tap cuts to size.

The pitch diameter of line pipe at the gage point is the same as the pitched diameter of American Standard Pipe Tap at the size line.

It should be remembered that the permissible gaging tolerance on line pipe and coupling is plus or minus one and one-half turns.

From this table it will be noted that in most cases it is not advisable to use American Standard Pipe Taps for threading line pipe couplings unless a straight tap is used first. If this latter practice were followed, the pitch diameter of the straight tap would probably be the same as the pitch diameter at the first perfect thread on the taper tap. This would eliminate the excessive crimping at the small end of the pipe or the imperfect seating of pipe in coupling due to a possible interference.



Showing relative position of top and pipe (when made up under power) in coupling

LINE PIPE—American Standard Tap

Size	Pitch	Perfect Length E	Turns Allowed For Power Make-up 3 Turns A	Turns Allowed For Power Make-up 4 Turns A	Basic C	Tolerance "C"	H	Perfect Thread on Tap Beyond end of Pipe C-A-E-H (Basic) A=3 Turns	Perfect Thread on Tap Beyond end of Pipe C-A-E-H (Basic) A=4 Turns
⅛	.037	.1898	.111	.148	.500	±.062	.093	+.106	+.069
¼	.0556	.2907	.167	.222	.750	±.062	.187	+.105	+.050
⅜	.0556	.4078	.167	.222	.750	±.062	.187	—.012	—.067
½	.0714	.4239	.214	.284	.968	±.062	.218	+.112	+.042
¾	.0714	.5457	.214	.284	.968	±.062	.218	—.010	—.080
1	.087	.5652	.261	.348	1.187	±.093	.250	+.111	+.024
1¼	.087	.7068	.261	.348	1.218	±.093	.250	+.0	—.087
1½	.087	.7235	.261	.348	1.250	±.093	.250	+.015	—.072
2	.087	.9304	.261	.348	1.250	±.093	.250	—.191	—.278
2½	.125	.9500	.375	.500	1.812	±.093	.375	+.112	—.013
3	.125	.9500	.375	.500	1.875	±.093	.375	+.175	+.050
3½	.125	1.1750	.375	.500	1.937	±.125	.375	+.012	—.113
4	.125	1.1750	.375	.500	2.000	±.125	.375	+.075	—.050
5	.125	1.4063	.375	.500	2.000	±.125	.375	—.156	—.281
6	.125	1.5125	.375	.500	2.250	±.125	.375	—.013	—.138
8	.125	1.7125	.375	.500	2.375	±.125	.375	—.088	—.213
10	.125	1.9250	.375	.500	2.500	±.125	.375	—.175	—.300

Refugio Represents *New Type* Oil Field *for* South Texas

By JACK LOGAN
Staff Representative

FROM nearly every viewpoint, even to the pronunciation of its name, the Refugio oil and gas field, Refugio County, has always been, and still is, more or less an enigma, giving rise to hesitations and doubts among those who would understand it. The field was named after the town of Refugio, around and in which it is located, and the town, in turn, had been founded and named by the Mexicans before Texas was a republic, *Refugio* being the Spanish word for "refuge." If the Spanish pronunciation were retained, Refugio would properly be called "Re-foo'he-o," but that does not roll gracefully out of an American's mouth, and so it is commonly distorted to "Re-few'ri-o."

Located along the Gulf Coastal plain, the land of American salt domes Refugio is nevertheless not a salt dome field, apparently, although producing from formations of the same age as those that are productive in the regular dome fields. Although drilled originally for oil, it developed into a gas field, exclusively, and continued as such for approximately a decade. The first oil was discovered by accident in 1928 when an old, unsuccessful gas test on the south side of the field was deepened in the hope of finding deeper gas production. That discovery oil well was Texas Gas Company's Clint Heard 1, later sold to Benedum-Trees Oil Company. It came in July 28, 1928, flowing 700 barrels of 26.5 gravity oil daily from a sand at 3682-3702 feet.

In the light of the former history of the field, however, no particular interest was created by the oil discovery. Several companies had prospected for oil there in the early days of the gas development with notably unsuccessful results, and consequently obsolete lease maps and severals great craters caused by gas blowouts were the only remaining evidence of several attempts to drill deep tests for oil in the field.

The established gas companies and a few independent operators, however, were mildly interested, and within the course of a year it was found that the oil production extended around the north and east flanks of the well defined and developed gas bearing area of the field.

Section of Lower Texas Coast Area showing location of Refugio with reference to nearby producing areas and prospects. A detail map of the Refugio field is included as a special supplement to this issue

There was no great faith in the field, however, and no major pipe line company was sufficiently interested to consider building into it. An independent producer, therefore, decided to provide a market outlet, and built a 32-mile six-inch line to sea-going-tanker loading docks at Port Aransas on the coast. In the meantime production from the 3700-foot sand found in the discovery well spread eastward into the town of Refugio, and the field's crude yield increased steadily and rapidly, pushing the area by the latter part of 1929 into first place among coastal fields in production as well as in drilling operations—a position which it has maintained continuously during 1930. The production during March and April, 1930, has been around 40,000 barrels daily.

In spite of the great amount of drilling that has been done, however, it is interesting to note that the larger, veteran coastal producers, including Gulf Production Company and Humble Oil & Refining Company, have not been represented in the oil production. The Texas Company has been represented only to the extent of drilling two tests. It was not until March, 1930, when Refugio had already produced approximately 5,000,000 barrels of oil, that Humble Pipe Line Company began building a line to the field.

The above observation regarding the non-participation of the principal major coastal operators, which ordinarily "protect" themselves with leases in all fields, is made in order to illustrate or emphasize the enigmatical nature of Refugio. All operators, both large and small, have been frankly puzzled, and for the most part dubious, regarding its possibilities. This probably is due to the fact that the field is more or less in a class by itself, being neither a salt dome nor a shoestring pool such as characterize the Laredo district to the southwest.

As a matter of fact, there will evidently be individual instances, at least, in which the results from operations will not justify the expenditures that have been made, for already there has been a relegation of numerous oil wells into the class of non-producers, particularly during the past several weeks. A check-up on April 11 showed over 20 former oil wells, mainly in the over-drilled town lot area, temporarily or permanently off production, due to lowered pressures or to sanding up. On the other hand, all production of the field at that time was from flowing wells, several of which were over a year old; and there were in the area a score of wells which had produced over 75,000 barrels each, and over a half dozen which had produced more than 100,000 barrels each, including two 3700-foot wells on one lease, approximately six months old each, which had a combined total recovery of over 400,000 barrels to their credit.

In the midst of the development of the 3700-foot oil sand Mission Drilling Company (now called Union Producing Company) made a location almost one mile beyond the proven area off the eastern edge of the field and put down a deep test, O'Brien 1, which failed to find production in the 3700-foot horizon but found high-gravity oil in commercial quantity at 5513-5525 feet, on September 26, 1929. Although bailed in as a high pressure gas well spraying about 30 barrels of oil daily, with 1900 pounds working pressure, the

Oil wells in the town of Refugio

following day it was producing oil at the rate of 90 barrels daily, the crude testing 32 gravity at 96 degrees. The oil production steadily continued to increase, amounting to 5422 barrels in October, 10,129 barrels in November, 14,168 barrels in December, 14,723 barrels in January, 1930, and 14,842 barrels in February, and 16,112 barrels in March, aggregating a total up to April 1, 1930, of 76,372 barrels.

The discovery of the 5500-foot production in what has since been called the "O'Brien" sand was somewhat of a surprise development, largely undreamed of and generally unforeseen. For who was thinking of mile-deep production when it was taking a long time to realize that even the shallower sand was actually producing oil? Who could think seriously in terms of multiple oil zones about this field which had been given up by experienced oil prospectors as a hopeless area offering possibilities only for producers of natural gas?

But the deep well was producing oil, nevertheless, and it heralded much greater possibilities for the field—more profitable oil and probably more stable production. Deep drilling had been notably successful in the immediate past around several of the salt domes. Perhaps it would be here also. Perhaps Refugio was after all an undiscovered treasure, destined to develop into a first class oil field.

Additional deep tests were put down. But again the uncertainty which had characterized Refugio throughout its history manifested itself. Some of the deep wells produced, but about an equal number did not. It was difficult, or in some cases impossible, to correlate the sands in the various wells. For a time it appeared that the deep production was from lenticular sands, but it now seems apparent that the 5500-foot production of the original deep well extends more or less unbroken around at least a wide sector of the east side of the field.

At the opening of 1930 there was considerable deep sand development in process in addition to the continued drilling to the 3700-foot sand.

At about that time Houston Gulf Gas Company, which like Union Producing Company is a subsidiary of the United Gas Company, was obligated to drill a wildcat two miles northeast of the "O'Brien" sand production in order to hold a large block of leases, and so it drilled M. F. Lambert 1. On February 25, 1930, that well came in flowing from a sand at 5879-5884 feet at the rate of about 350 barrels daily through a 3/16-inch choke, and showing 750 pounds pressure; but production was increasing, as in the "O'Brien" sand discovery well, and within a few days it had risen to about 1500 barrels daily. The corrected gravity of the oil from the 5800-foot well was 30.9, and it was a different crude from that of the 5500-foot sand, being somewhat heavier and distinctly brown in color, as compared with the greenish brown of the "O'Brien" production. During the four remaining days of February the wildcat producer yielded 3155 barrels of oil, and in March it produced 48,558 barrels, or an average of 1566 barrels daily.

Aside from the fact that it is yielding an altogether different grade and kind of oil from that found in the "O'Brien" sand, the deep extension well had not encountered the sands found regularly in the 5500-foot wells. Consequently it appears possible that an altogether new "pool" may have been opened by M. F. Lambert 1. Anyway, that wildcat producer has furnished the Refugio operators something additional to puzzle over.

Discover Deeper Sand

Finally there has been the discovery of still another deep sand, the deepest of them all—the 6500-foot horizon from which Union Producing Company's Rose Lambert 1-A is yielding 42 gravity oil. That well came in April 1, 1930, producing gas and a little oil from sand logged at 6456-6468 feet, and gradually increased in oil production. On April 15 it flowed 160 barrels net oil, although it produced also about 600 barrels of water. This is the deepest producing well in the Texas Gulf Coast, and the deepest of the Texas-Louisiana Gulf Coast aside from two at Evangeline, Louisiana, that are over 7000 feet deep.

Rose Lambert 1-A is located approximately 3500 feet north of the nearest of the 5500-foot oil wells, the O'Brien 1, and it is 8500 feet from the wildcat producer, M. F. Lambert 1, to the northeast.

In the middle of April, 1930, therefore, there were already four definite oil producing sands in the Refugio field, roughly designated as the 3700-foot sand, the 5500-foot or "O'Brien" sand, the 5800-foot sand, and the 6500-foot sand. How extensive the production from each of those sands will be is an interesting but of course difficult question, and whether or not there will be even deeper productive sands is another rather fascinating subject for contemplation. What will be found farther down remains to be seen, but one test, Independent Oil & Gas Company's O'Brien 1, is already going ahead in search of deeper oil.

Considering the above cursory history of the field, particularly that portion dealing with the deep sand development, it is evident that there is ample justification for the introductory statement of this article to the effect that Refugio is still more or less an enigma, and future developments will no doubt be followed with great interest. For although it is now rather late to be developing interest in this particular field from the standpoint of operating there, it is likely that other fields of similar type will be developed in South Texas in the future.

The general facts about Refugio having been presented, and the possibilities of its future having been touched upon, additional details will now be given regarding the deep and the shallow oil development; something will be said regarding the geology of the field, transportation and storage facilities, field conditions, and drilling and production practice; and information will be given regarding the extensive natural gas development that took place in the field during its early days, the once interesting but now little thought of decade which constituted the first important period of its history.

Productive Acreage

The surface elevations of oil wells at Refugio range from 22 feet, that of Pear-

(Continued on page 53)

COMPLETED OIL WELLS AT REFUGIO AS OF APRIL 22, 1930

Recapitulation

Classification	Total Wells
High Gravity (Deep) Oil Wells	12
Low Gravity (3700-Foot) Oil Wells	127
Productive Gas Wells	131
Non-Productive Tests	69
Total	339

HIGH GRAVITY (DEEP) OIL WELLS

(All located in eastern portion of field, and all still producing on above date)

Company and Well	Date completed	Top of sand	Total depth
Union Producing Company—			
J. J. O'Brien 1	9-26-29	5513	5523
Mitchell 2	1- 1-30	5448	5461
Powers 2	1- 8-30	5481	5495
M. F. Lambert 1	2-25-30	5879	5884
Rose Lambert A-1	4- 1-30	6456	6468
Morgan Oil Corporation—			
Carlysle 1, Block 2	2-24-30	5460	5470
Tom Heard 1, Block 3	3-11-30	5472	5483
O'Brien 1 (Mission)	4- 8-30	5406	5431
Saxet Oil Company—			
Ryals 1	1-27-30	5453	5472
Pearson Properties, Inc.—			
Ryals 1	3-23-30	5478	5482
Houston Oil Company—			
Doughty 1, Block 23	4-22-30	5461	5472
Tom Heard 1, Block 16	4-22-30	5460	5470

LOW GRAVITY OIL WELLS (3700-FOOT SAND)

Company and Well	Date completed	Top of sand	Total depth
Benedum-Trees Oil Company—			
Clinton Heard 1	7-28-28	3682	3702
Clinton Heard 2	12- 5-28	3670	3682
Clinton Heard 3	12-14-28	3676	3691
F. B. Rooke 2	5-13-29	3677	3689
Fox & Heflin—			
Fannie Heard 1	3-30-30	3688	3700
Dr. W. E. Hewitt—			
Cemetery 1	10- 8-29	3664	3674
Cemetery 2	11-12-29	3656	3679
Houston Oil Company—			
Wilson Heard 4	12-22-28	3676	3690
Wilson Heard 5	3-28-29	3678	3686
Wilson Heard 7	6-22-29	3691	3700
Wilson Heard 8	10- 7-29	3674	3686
Wilson Heard 9	12-16-29	3674	3681
F. B. Rooke (200 acres) 10	4-18-29	3678	3686
F. B. Rooke (200 acres) 12	8- 6-29	3686	3693
F. B. Rooke (200 acres) 13	10-26-29	3674	3682
F. B. Rooke (36 acres) F-1	7-25-29	3685	3725
F. V. W. Heard 12	7-19-29	3655	3662
F. V. W. Heard 6	9-20-29	3297	3305
F. B. Rooke (472 acres) 6	7-19-29	3689	3708
F. B. Rooke (472 acres) 10	11- 4-29	3691	3703
F. B. Rooke (472 acres) 12	1-20-30	3676	3686
F. B. Rooke (472 acres) 11	1-27-30	3667	3680
Rea 2 (wo.)	1-29-30	3673	3683
Rooke Hotel 1, Block 48	3-10-30	3685	3696
Carlysle 1, Block 33	3- 3-30	3695	3717
Shelton 1, Block 100	3-22-30	3670	3683
Dorsey 1, Block 78	3-30-30	3683	3695
Leisering 1, Block 55 (Formerly Rutherford-Traylor Oil Company Wells)	4-11-30	3683	3693
Scott 1, Block 92	1-27-30	3677	3695
Fox Heirs 1, Block 77 (Formerly Oigufer Oil Company Wells)	2- 6-30	3676	3705
Helen Ryals 1	4-23-29	3669	3683
Helen Ryals 2	7-30-29	3651	3656
Heep Oil Corporation—			
Rutherford 1, Block 1	1-27-30	3674	3709
J. T. Vance 1	3-14-30	3689	3703
Independent Oil & Gas Company—			
West 1	10- 1-29	3663	3671
West 2	2- 1-30	3656	3677
West 3	4- 3-30	3680	3686
Jerry Reilly 2	10- 3-29	3667	3675
Jerry Reilly 3	10-24-29	3659	3666
Jerry Reilly 4	12- 1-29	3688	3694
Jerry Reilly 5	12-20-29	3679	3689
Jerry Reilly 6	2-25-30	3683	3689
Anna Reilly 1	10-20-29	3685	3695
Claud Heard 1	12- 2-29	3668	3674
Claud Heard 2	2- 3-30	3686	3694
Claud Heard 3	3-23-30	3686	3696
J. F. B. Heard B-1	1- 5-30	3653	3666
Edwin M. Jones—			
J. F. B. Heard 1-A	4-20-30	3644	3666
Leisering A-1, Block 49	2-28-30	3677	3681
Korona Oil Company—			
Zarsky 1, Block 91	3-22-30	3688	3700
Larcro Gas & Petroleum Company—			
Strauch 1	1- 2-30	3673	3705
Strauch 3	2-20-30	3671	3706
T. P. Morgan—			
Fox Hrs. 1, Block 70	3-23-30	3680	3701
Morgan Oil Corporation—			
City 1	8-30-29	3666	3675
City 2	11-26-29	3678	3686
City 3	11-22-29	3698	3699
City 4	2- 6-30	3688	3706
City 5	3-12-30	3688	3703
Fox 1, Block 75	9-17-29	3641	3652
Fox 1, Block 114	10-16-29	3670	3677
Fox 1, Block 72	1-15-30	3674	3685
Fox 1, Block 71	2-15-30	3674	3705
Fox 1, Block 76	12-14-29	3669	3677
Strauch 1	11-27-29	3675	3704
Johnson 1	12-14-29	3650	3657
Swift 1	2-14-30	3671	3696
Pearson Properties, Inc.—			
Fox Heirs 1	7-30-29	3722	3727
Fox Heirs 2	11-21-29	3682	3708
Simpson 1	9- 1-29	3655	3664
Swift et al 1	10-29-29	3683	3696
Babb 1	12-20-29	3680	3698
Claud Heard 1, Block 27	1-21-30	3681	3687
Johnson 1, Block 11	4- 4-30	3673	3690
Refugio Oil Corporation—			
Murphy 1	10-29-29	3681	3707
Murphy 2	12-13-29	3644	3675
Wheeler 1, Block 50	3- -30	3667	3686
Saxet Oil Company—			
Clinton Heard 4	9-25-28	3674	3690
Clinton Heard 5	1-17-29	3712	3715
Clinton Heard 6	3-31-29	3681	3688
Clinton Heard 8	7-24-29	3690	3693
Clinton Heard 9	8-30-29	3672	3682
Clinton Heard 10	10-11-29	3674	3686
Clinton Heard 11	11-22-29	3672	3699
Holmes Heard 2	10-29-28	3687	3701
Holmes Heard 3	1- 6-30	3698	3720
City 1, Block 74	9-15-29	3651	3661
Fox Heirs 1, Block 95	9-26-29	3656	3665
Powers 1, Block 3	10-13-29	3688	3700
Serafino 1	11-17-29	3686	3693
Cable 1, Block 20	2-10-30	3686	3692
Sun Oil Company—			
W. L. Rea 1	6-25-29	3669	3675
W. L. Rea 2	8-13-29	3654	3678
Buckley 2	9-12-29	3697	3707
Buckley 3	3- -30	3670	3693
Johnson 1	9-15-29	3678	3702
Leisering 1	10-31-29	3682	3698
Leisering 2	11- 6-29	3683	3703
Stroube & Stroube—			
Cable 1	4-19-30	3697	3684
The Texas Company—			
Cline Heard 1	11-18-29	3674	3682
Texas Gas Company—&			
Rogers 1, Block 116	8-26-29	3682	3686
Union Producing Company—			
Fox Heirs 1	4-27-29	3637	3645
Huddleston 1, Block 94	6-27-29	3645	3653
T. P. Shelly 1	7-16-29	3608	3646
T. P. Shelly 2	10-21-29	3641	3661
T. P. Shelly 3	11- 3-29	3649	3683
T. P. Shelly 4	4- 4-30	3647	3661
Julia Shay 1	8- 7-29	3657	3665
Dabney Fee 1	9-11-29	3653	3659
Strauch 1, Block 98	9-19-29	3647	3668
Kuykendall 1, Block 93	11- 4-29	3666	3671
J. F. B. Heard (50 acres) 1	11-22-29	3661	3669
J. F. B. Heard (50 acres) 2	2-26-30	3663	3668

(See next page)

Oil wells in the town of Refugio

following day it was producing oil at the rate of 90 barrels daily, the crude testing 32 gravity at 96 degrees. The oil production steadily continued to increase, amounting to 5422 barrels in October, 10,129 barrels in November, 14,168 barrels in December, 14,723 barrels in January, 1930, and 14,842 barrels in February, and 16,112 barrels in March, aggregating a total up to April 1, 1930, of 76,372 barrels.

The discovery of the 5500-foot production in what has since been called the "O'Brien" sand was somewhat of a surprise development, largely undreamed of and generally unforeseen. For who was thinking of mile-deep production when it was taking a long time to realize that even the shallower sand was actually producing oil? Who could think seriously in terms of multiple oil zones about this field which had been given up by experienced oil prospectors as a hopeless area offering possibilities only for producers of natural gas?

But the deep well was producing oil, nevertheless, and it heralded much greater possibilities for the field—more profitable oil and probably more stable production. Deep drilling had been notably successful in the immediate past around several of the salt domes. Perhaps it would be here also. Perhaps Refugio was after all an undiscovered treasure, destined to develop into a first class oil field.

Additional deep tests were put down. But again the uncertainty which had characterized Refugio throughout its history manifested itself. Some of the deep wells produced, but about an equal number did not. It was difficult, or in some cases impossible, to correlate the sands in the various wells. For a time it appeared that the deep production was from lenticular sands, but it now seems apparent that the 5500-foot production of the original deep well extends more or less unbroken around at least a wide sector of the east side of the field.

At the opening of 1930 there was considerable deep sand development in process in addition to the continued drilling to the 3700-foot sand.

At about that time Houston Gulf Gas Company, which like Union Producing Company is a subsidiary of the United Gas Company, was obligated to drill a wildcat two miles northeast of the "O'Brien" sand production in order to hold a large block of leases, and so it drilled M. F. Lambert 1. On February 25, 1930, that well came in flowing from a sand at 5879-5884 feet at the rate of about 350 barrels daily through a 3/16-inch choke, and showing 750 pounds pressure; but production was increasing, as in the "O'Brien" sand discovery well, and within a few days it had risen to about 1500 barrels daily. The corrected gravity of the oil from the 5800-foot well was 30.9, and it was a different crude from that of the 5500-foot sand, being somewhat heavier and distinctly brown in color, as compared with the greenish brown of the "O'Brien" production. During the four remaining days of February the wildcat producer yielded 3155 barrels of oil, and in March it produced 48,558 barrels, or an average of 1566 barrels daily.

Aside from the fact that it is yielding an altogether different grade and kind of oil from that found in the "O'Brien" sand, the deep extension well had not encountered the sands found regularly in the 5500-foot wells. Consequently it appears possible that an altogether new "pool" may have been opened by M. F. Lambert 1. Anyway, that wildcat producer has furnished the Refugio operators something additional to puzzle over.

Discover Deeper Sand

Finally there has been the discovery of still another deep sand, the deepest of them all—the 6500-foot horizon from which Union Producing Company's Rose Lambert 1-A is yielding 42 gravity oil. That well came in April 1, 1930, producing gas and a little oil from sand logged at 6456-6468 feet, and gradually increased in oil production. On April 15 it flowed 160 barrels net oil, although it produced also about 600 barrels of water. This is the deepest producing well in the Texas Gulf Coast, and the deepest of the Texas-Louisiana Gulf Coast aside from two at Evangeline, Louisiana, that are over 7000 feet deep.

Rose Lambert 1-A is located approximately 3500 feet north of the nearest of the 5500-foot oil wells, the O'Brien 1, and it is 8500 feet from the wildcat producer, M. F. Lambert 1, to the northeast.

In the middle of April, 1930, therefore, there were already four definite oil producing sands in the Refugio field, roughly designated as the 3700-foot sand, the 5500-foot or "O'Brien" sand, the 5800-foot sand, and the 6500-foot sand. How extensive the production from each of those sands will be is an interesting but of course difficult question, and whether or not there will be even deeper productive sands is another rather fascinating subject for contemplation. What will be found farther down remains to be seen, but one test, Independent Oil & Gas Company's O'Brien 1, is already going ahead in search of deeper oil.

Considering the above cursory history of the field, particularly that portion dealing with the deep sand development, it is evident that there is ample justification for the introductory statement of this article to the effect that Refugio is still more or less an enigma, and future developments will no doubt be followed with great interest. For although it is now rather late to be developing interest in this particular field from the standpoint of operating there, it is likely that other fields of similar type will be developed in South Texas in the future.

The general facts about Refugio having been presented, and the possibilities of its future having been touched upon, additional details will now be given regarding the deep and the shallow oil development; something will be said regarding the geology of the field, transportation and storage facilities, field conditions, and drilling and production practice; and information will be given regarding the extensive natural gas development that took place in the field during its early days, the once interesting but now little thought of decade which constituted the first important period of its history.

Productive Acreage

The surface elevations of oil wells at Refugio range from 22 feet, that of Pear-

(Continued on page 53)

COMPLETED OIL WELLS AT REFUGIO AS OF APRIL 22, 1930

Recapitulation

Classification	Total Wells
High Gravity (Deep) Oil Wells	12
Low Gravity (3700-Foot) Oil Wells	127
Productive Gas Wells	131
Non-Productive Tests	69
Total	339

HIGH GRAVITY (DEEP) OIL WELLS

(All located in eastern portion of field, and all still producing on above date)

Company and Well	Date completed	Top of sand	Total depth
Union Producing Company—			
J. J. O'Brien 1	9-26-29	5513	5523
Mitchell 2	1- 1-30	5448	5461
Powers 2	1- 8-30	5481	5495
M. F. Lambert 1	2-25-30	5879	5884
Rose Lambert A-1	4- 1-30	6456	6468
Morgan Oil Corporation—			
Carlysle 1, Block 2	2-24-30	5460	5470
Tom Heard 1, Block 3	3-11-30	5472	5483
O'Brien 1 (Mission)	4- 8-30	5406	5431
Saxet Oil Company—			
Ryals 1	1-27-30	5453	5472
Pearson Properties, Inc.—			
Ryals 1	3-23-30	5478	5482
Houston Oil Company—			
Doughty 1, Block 23	4-22-30	5461	5472
Tom Heard 1, Block 16	4-22-30	5460	5470

LOW GRAVITY OIL WELLS (3700-FOOT SAND)

Company and Well	Date completed	Top of sand	Total depth
Benedum-Trees Oil Company—			
Clinton Heard 1	7-28-28	3682	3702
Clinton Heard 2	12- 5-28	3670	3682
Clinton Heard 3	12-14-28	3676	3691
F. B. Rooke 2	5-13-29	3677	3689
Fox & Heflin—			
Fannie Heard 1	3-30-30	3688	3700
Dr. W. E. Hewitt—			
Cemetery 1	10- 8-29	3664	3674
Cemetery 2	11-12-29	3656	3679
Houston Oil Company—			
Wilson Heard 4	12-22-28	3676	3690
Wilson Heard 5	3-28-29	3678	3686
Wilson Heard 7	6-22-29	3691	3700
Wilson Heard 8	10- 7-29	3674	3686
Wilson Heard 9	12-16-29	3674	3681
F. B. Rooke (200 acres) 10	4-18-29	3678	3686
F. B. Rooke (200 acres) 12	8- 6-29	3686	3693
F. B. Rooke (200 acres) 13	10-26-29	3674	3682
F. B. Rooke (36 acres) F-1	7-25-29	3685	3725
F. V. W. Heard 12	7-19-29	3655	3662
F. V. W. Heard 6	9-20-29	3297	3305
F. B. Rooke (472 acres) 6	7-19-29	3689	3708
F. B. Rooke (472 acres) 10	11- 4-29	3691	3703
F. B. Rooke (472 acres) 12	1-20-30	3676	3686
F. B. Rooke (472 acres) 11	1-27-30	3667	3680
Rea 2 (wo.)	1-29-30	3673	3683
Rooke Hotel 1, Block 48	3-10-30	3685	3696
Carlysle 1, Block 33	3- 3-30	3695	3717
Shelton 1, Block 100	3-22-30	3670	3683
Dorsey 1, Block 78	3-30-30	3683	3695
Leisering 1, Block 55 (Formerly Rutherford-Traylor Oil Company Wells)	4-11-30	3683	3693
Scott 1, Block 92	1-27-30	3677	3695
Fox Heirs 1, Block 77 (Formerly Oigufer Oil Company Wells)	2- 6-30	3676	3705
Helen Ryals 1	4-23-29	3669	3683
Helen Ryals 2	7-30-29	3651	3656
Heep Oil Corporation—			
Rutherford 1, Block 1	1-27-30	3674	3709
J. T. Vance 1	3-14-30	3689	3703
Independent Oil & Gas Company—			
West 1	10- 1-29	3663	3671
West 2	2- 1-30	3656	3677
West 3	4- 3-30	3680	3686
Jerry Reilly 2	10- 3-29	3667	3675
Jerry Reilly 3	10-24-29	3659	3666
Jerry Reilly 4	12- 1-29	3688	3694
Jerry Reilly 5	12-20-29	3679	3689
Jerry Reilly 6	2-25-30	3683	3689
Anna Reilly 1	10-20-29	3685	3695
Claud Heard 1	12- 2-29	3668	3674
Claud Heard 2	2- 3-30	3686	3694
Claud Heard 3	3-23-30	3686	3696
J. F. B. Heard B-1	1- 5-30	3653	3666
Edwin M. Jones—			
J. F. B. Heard 1-A	4-20-30	3644	3666
Leisering A-1, Block 49	2-28-30	3677	3681
Korona Oil Company—			
Zarsky 1, Block 91	3-22-30	3688	3700
Larcro Gas & Petroleum Company—			
Strauch 1	1- 2-30	3673	3705
Strauch 3	2-20-30	3671	3706
T. P. Morgan—			
Fox Hrs. 1, Block 70	3-23-30	3680	3701
Morgan Oil Corporation—			
City 1	8-30-29	3666	3675
City 2	11-26-29	3678	3686
City 3	11-22-29	3698	3699
City 4	2- 6-30	3688	3706
City 5	3-12-30	3688	3703
Fox 1, Block 75	9-17-29	3641	3652
Fox 1, Block 114	10-16-29	3670	3677
Fox 1, Block 72	1-15-30	3674	3685
Fox 1, Block 71	2-15-30	3674	3705
Fox 1, Block 76	12-14-29	3669	3677
Strauch 1	11-27-29	3675	3704
Johnson 1	12-14-29	3650	3657
Swift 1	2-14-30	3671	3696
Pearson Properties, Inc.—			
Fox Heirs 1	7-30-29	3722	3727
Fox Heirs 2	11-21-29	3682	3708
Simpson 1	9- 1-29	3655	3664
Swift et al 1	10-29-29	3683	3696
Babb 1	12-20-29	3680	3698
Claud Heard 1, Block 27	1-21-30	3681	3687
Johnson 1, Block 11	4- 4-30	3673	3690
Refugio Oil Corporation—			
Murphy 1	10-29-29	3681	3707
Murphy 2	12-13-29	3644	3675
Wheeler 1, Block 50	3- -30	3667	3686
Saxet Oil Company—			
Clinton Heard 4	9-25-28	3674	3690
Clinton Heard 5	1-17-29	3712	3715
Clinton Heard 6	3-31-29	3681	3688
Clinton Heard 8	7-24-29	3690	3693
Clinton Heard 9	8-30-29	3672	3682
Clinton Heard 10	10-11-29	3674	3686
Clinton Heard 11	11-22-29	3672	3699
Holmes Heard 2	10-29-28	3687	3701
Holmes Heard 3	1- 6-30	3698	3720
City 1, Block 74	9-15-29	3651	3661
Fox Heirs 1, Block 95	9-26-29	3656	3665
Powers 1, Block 3	10-13-29	3688	3700
Serafino 1	11-17-29	3686	3693
Cable 1, Block 20	2-10-30	3686	3692
Sun Oil Company—			
W. L. Rea 1	6-25-29	3669	3675
W. L. Rea 2	8-13-29	3654	3678
Buckley 2	9-12-29	3697	3707
Buckley 3	3- -30	3670	3693
Johnson 1	9-15-29	3678	3702
Leisering 1	10-31-29	3682	3698
Leisering 2	11- 6-29	3683	3703
Stroube & Stroube—			
Cable 1	4-19-30	3697	3684
The Texas Company—			
Cline Heard 1	11-18-29	3674	3682
Texas Gas Company—&			
Rogers 1, Block 116	8-26-29	3682	3686
Union Producing Company—			
Fox Heirs 1	4-27-29	3637	3645
Huddleston 1, Block 94	6-27-29	3645	3653
T. P. Shelly 1	7-16-29	3608	3646
T. P. Shelly 2	10-21-29	3641	3661
T. P. Shelly 3	11- 3-29	3649	3683
T. P. Shelly 4	4- 4-30	3647	3661
Julia Shay 1	8- 7-29	3657	3665
Dabney Fee 1	9-11-29	3653	3659
Strauch 1, Block 98	9-19-29	3647	3668
Kuykendall 1, Block 93	11- 4-29	3666	3671
J. F. B. Heard (50 acres) 1	11-22-29	3661	3669
J. F. B. Heard (50 acres) 2	2-26-30	3663	3668

(See next page)

Company and Well	Date completed	Top of sand	Total depth
H. Heard 1, Block 99	12-14-29	3679	3695
(Formerly Houston Gulf Gas Company Wells)			
N. D. Cummings 1	2-11-29	3691	3699
N. D. Cummings 2	12- 3-29	3659	3662
N. D. Cummings 3	2-19-30	3637	3651
Shelly 7	4-14-29	3706	3712
Shelly-Ryals 8	11-11-29	3656	3674
F. V. W. Heard 7	4-14-29	3681	3691
F. V. W. Heard 8	11- 5-29	3677	3685
T. P. Shelly-Morgan 1	9-18-29	3650	3655
T. P. Shelly-Morgan 2	12-2 -29	3651	3659
J. T. Vance-Morgan 1	10-3-29	3660	3683
J. T. Vance-Morgan 2	2-17-30	3682	3692
N. J. Ryals 4	7- 5-29	3663	3671
N. J. Ryals 5	9- 1-29	3672	3680
(Formerly Union Exploration Company Well)			
F. B. Rooke (100 acres) 2	9-13-29	3665	3671

COMPLETED GAS PRODUCERS AT REFUGIO

Texas Gulf Oil & Gas Association—F. V. W. Heard 1	9- -20	....	1902
Pratt-Hewitt Oil Company—F. B. Rooke 2	3-11-21	....	2420
Pratt-Hewitt Oil Company—F. B. Rooke 4	12-25-23	2405	2430
Pratt-Hewitt Oil Company—F. B. Rooke 6	1-28-25	2415	2429
Refugio Oil & Gas Company—T. P. Shelly-M. H. Ryals 1	5-10-25	2426	2457
Houston Oil Company—F. B. Rooke 1	8-15-25	2385	2392
Houston Oil Company—F. V. W. Heard 1	10- 6-25	2410	2420
Houston Oil Company—Clint Heard 1-A	11-20-25		2435
Houston Oil Company—F. V. W. Heard 2	12-18-25	2391	2406
Houston Gulf Gas Company—A. W. J. Heard A-1	12-22-25	2414	2414
Houston Oil Company—F. B. Rooke 4	1-11-26	2390	2398
Houston Gulf Gas Company—A. W. J. Heard-Moody 1	1-16-26	2390	2400
Houston Oil Company—Clint Heard 2-A	3- 2-26	1624	1637
Houston Gulf Gas Company—A. W. J. Heard A-2	3- 7-26	2435	2444
Houston Gulf Gas Company—F. V. W. Heard 1	3-10-26	2412	2440
Houston Oil Company—F. B. Rooke 5	4-16-26	2391	2403
Houston Oil Company—F. B. Rooke 1	5-14-26	3210	3220
Houston Gulf Gas Company—F. V. W. Heard 2	5-16-26	2396	2406
Houston Oil Company—F. B. Rooke Rec. 2	5-19-26	2370	2382
Houston Gulf Gas Company—A. W. J. Heard Rec. 1	5-21-26	2406	2422
Houston Gulf Gas Company—A. W. J. Heard Rec. 2	5-21-26	2390	2399
Houston Oil Company—F. B. Rooke Rec. 1	5-22-26	2396	2408
Houston Oil Company—F. V. W. Heard 4	6-22-26	2395	2404
Bartlett-Brooks—C. Heard A-1	6-29-26	1592	1611
Refugio Oil & Gas Company—Holmes Heard 1	7- 8-26	2172	2178
Refugio Oil & Gas Company—T. P. Shelly-M. H. Ryals 2	7-22-26	1878	1890
Houston Gulf Gas Company—F. V. W. Heard 1-A	8-12-26	2412	2422
Houston Oil Company—F. B. Rooke 7	8-13-26	2078	2080
Houston Gulf Gas Company—Rose Lambert 1	9- 3-26	1660	1670
Houston Oil Company—F. V. W. Heard 5	9- 7-26	2103	2104
Houston Oil Company—F. V. W. Heard 6	9- 8-26	1876	1884
Bartlett-Brooks—A. W. J. Heard A-4	9-22-26	1868	1880
Houston Gulf Gas Company—N. J. Ryals 2	10-10-26	2077	2188
Houston Oil Company—F. V. W. Heard 7	10-16-26	1852	1857
Houston Gulf Gas Company—J. T. Vance 1	10-19-26	1683	1691
Houston Gulf Gas Company—J. A. Lambert 5	11- 1-26	1596	1614
Houston Oil Company—F. B. Rooke 8	11-12-26	....	2159
Houston Gulf Gas Company—T. P. Shelly-M. H. Ryals 3	11-16-26	1914	1922
Houston Oil Company—F. B. Rooke 7	11-20-26	....	2380
Houston Gulf Gas Company—T. P. Shelly-M. H. Ryals 4	11-21-26	1614	1623
Houston Gulf Gas Company—W. L. Rea 1	12- 1-26	2120	2144
Houston Oil Company—F. B. Rooke 8	12- -26	2225	2244
W. F. Morgan—Leslie Adkins 1	1- 6-27	1627	1636
Houston Gulf Gas Company—F. V. W. Heard 4	1-17-27	1921	1936
Houston Oil Company—F. B. Rooke 9	1-27-27	....	1567
W. F. Morgan—C. P. Fox 2	2- 5-27	2098	2106
Houston Gulf Gas Company—W. L. Rea Hrs. 2	2-7 -27	2110	2118
Houston Oil Company—F. V. Heard 8	2-25-27	2126	2134
Houston Gulf Gas Company—Rose Lambert 2	2-27-27	1715	1722
Houston Gulf Gas Company—A. W. J. Heard, Moody 2	2-28-27	1419	1426
Houston Oil Company—F. V. W. Heard	3- 6-27	1560	1567
W. F. Morgan—L. M. Rogers & Heirs 1	3-23-27	1590	1600
Houston Oil Company—F. B. Rooke 6	4- 1-27	....	1425
Bartlett-Brooks—A. W. J. Heard A-5	4-22-27	1610	1617
W. F. Morgan—T. P. Skelly and M. H. Ryals 5	4-26-27	....	2550
Houston Gulf Gas Company—J. E. Fox and Heirs 3	5- 3-27	2335	2341
Houston Oil Company—F. B. Rooke 2-A	5- 3-27	1404	1407
W. F. Morgan—J. A. Lambert 1	5-10-27	2470	2494
Houston Oil Company—F. V. W. Heard 10	5-10-27	2025	2030
Houston Gulf Gas Company—A. W. J. Heard Rec. 3	5-14-27	1553	1559
Houston Gulf Gas Company—A. W. J. Heard 1	5-19-27	1854	1862
W. F. Morgan—Leslie Adkins 2	5-21-27	1634	1640
Houston Gulf Gas Company—J. A. Lambert 6	5-24-27	1165	1165
Houston Gulf Gas Company—W. L. Rea 1	5-18-27	....	2359
Houston Gulf Gas Company—A. W. J. Heard 1	7- 1-27	1854	1862
Houston Gulf Gas Company—W. L. Rea and Heirs 2	7- 3-27	2400	2403
Houston Gulf Gas Company—A. W. J. Heard 2	8- 6-27	1892	1899
Houston Oil Company—F. V. W. Heard A-1	8-13-27	1904	1922
Houston Gulf Gas Company—C. P. Fox 2	8-27-27	2415	2422
Houston Gulf Gas Company—A. W. J. Heard A-1	8-27-27	2300	2330
Houston Gulf Gas Company—T. P. Skelly, M. H. Ryals 6	9 -6-27	3303	3305
Houston Gulf Gas Company—A. W. J. Heard H. G. G. 3	9- 9-27	1569	1581
Houston Oil Company—F. V. W. Heard 6	11- 1-27	3247	3305
Houston Gulf Gas Company—T. P. Skelly, M. H. Ryals 4	11- 1-27	3310	3320
Houston Gulf Gas Company—A. W. J. Heard, Moody 2	11- 3-27	3437	3462
Houston Gulf Gas Company—N. J. Ryals 3	11-10-27	3228	3244
Houston Gulf Gas Company—F. V. Heard 5	12-19-27	3304	3309
Houston Oil Company—F. V. W. Heard 11	12- -27	3285	3294
Houston Oil Company—F. V. W. Heard 4	4-22-27	1823	1846
Houston Oil Company—F. B. Rooke 4	1- 4-28	2839	2843
Houston Gulf Gas Company—T. P. Skelly, M. H. Ryals 2	1-27-28	....	3309
Houston Gulf Gas Company—O'Connor 1	1-28-28	....	2011
Houston Gulf Gas Company—J. T. Vance 1	2-25-28	....	3186
Houston Gulf Gas Company—N. J. Ryals 2	2-25-28	3251	3258
Houston Oil Company—W. J. Heard 8	3- 1-28	3256	3266
Houston Oil Company—F. B. Rooke 11	3- 1-28	2851	2858
Houston Oil Company—F. B. Rooke 1	3- 4-28	....	3220
Houston Gulf Gas Company—A. W. J. Heard 5	3-28-28	3250	3253
Houston Oil Company—F. V. W. Heard 8	4- 5-28	....	3310
Houston Oil Company—F. B. Rooke 6	4- 5-28	....	3495
Houston Gulf Gas Company—W. Heard 4	4- 5-28	3434	3450
Houston Oil Company—F. V. W. Heard 11	4-26-28	3434	3442
Saxet Oil Company—W. Heard A-6	4-28-28	....	2860
Pratt-Hewitt-Houston Oil Company—F. B. Rooke 9	5- 1-28	....	2008
Texas Gas Company—Strauch 1	5-12-28	....	3710
Houston Oil Company—Lambert 1	5-17-28	....	2008
Saxet Oil Company—W. Heard A-6	6-19-28	....	3471
H. Heep—H. Heard 1	7- 1-28	....	....
Houston Oil Company—F. V. W. Heard 2	9-15-28	....	3437
Houston Gulf Gas Company—O'Connor 1	9-23-28	....	4065
Saxet Oil Company—C. Heard 4	9-25-28	3674	3690
Phil-Tex—Rogers Heirs 2	9-29-28	3650	3704
Houston Gulf Gas Company—W. L. Rea 1	10- 9-28	....	....
Houston Gulf Gas Company—W. Heard A-2	10-10-28	3629	3639
Houston Oil Company—F. B. Rooke 8	10-11-28	....	3365
Sun Company—J. Buckley 1	10-22-28	3650	3657
Houston Oil Company—F. B. Rooke 10	11-30-28	....	....
Houston Gulf Gas Company—T. P. Skelly, M. H. Ryals 2	1- 3-29	3647	3649
Saxet Oil Company—C. Heard 5	1-17-29	3712	3715
Houston Gulf Gas Company—W. L. Rea 3	2-14-29	3466	3476
Union Exploration Company—F. B. Rooke, Morgan 1	3- 2-29	3662	3675
Houston Gulf Gas Company—Fox Heirs 3	3- 2-29	3582	3587
Pratt-Hewitt-Houston Oil Company—F. B. Rooke Rec. 1	3-13-29	....	3000
Houston Gulf Gas Company—F. V. W. Heard 7	4-14-29	3686	3691
Houston Gulf Gas Company—R. Lambert 2	4-20-29	3636	3646
Houston Gulf Gas Company—J. A. Lambert 6	5-10-29	3578	3584
Saxet Oil Company—C. Heard 7	5-12-29	3678	3687
Houston Gulf Gas Company—H. Heard 4	6-12-29	3637	3648
Korona Company—Reilly 1	6-18-29	3654	3668
Houston Oil Company—F. B. Rooke F-1	8- 5-29	....	3685
Houston Gulf Gas Company—J. A. Lambert 9	8- 6-29	3573	3577
Houston Gulf Gas Company—R. Lambert 3	8-13-29	3648	3654
Houston Gulf Gas Company—Ryals 5	9- 1-29	3672	3680
Houston Gulf Gas Company—O'Brien 5	10-11-29	3662	3676
Houston Gulf Gas Company—F. V. W. Heard 8	11- 5-29	3666	3685
M. D. Company—J. F. B. Heard 1	11-12-29	3661	....
Houston Gulf Gas Company—Tom Heard 3	12-12-29	3603	....
Houston Gulf Gas Company—Lambert 9	12-16-29	3564	3577
Independent Oil & Gas Company—J. F. B. Heard 1-A	12-27-29	3670	3680
Union Producing Company—O'Brien 6	2-24-30	3674	3680
Houston Gulf Gas Company—Shelly-Ryals 9	2-25-30	3660	3692

Business district at Refugio, showing oil wells in town. Grocery store faces court house

(Continued from page 50)

son Properties, Incorporated's No. 1, Town Block 27, east side of the field, to 73 feet, that of Saxet Oil Company's Holmes Heard 2, north end of the field.

Viewed on a map, the Refugio field is in the main of oval outline, tending toward the rectangular, and has much the appearance of a salt dome oil field except that in the center, where salt domes commonly have cap rock or shallow sand oil wells or non-productive acreage, Refugio has gas wells.

Those gas wells of lesser depths occupy the entire center of the field, and extend out to a more or less definite limits beyond which the surrounding oil belt is found. That inner or central gas producing territory embraces an area of approximately 4000 acres, with an east to west axis of 11,000 feet (two miles) and a north-south axis of 16,000 feet (three miles).

Although the oil development in the 3700-foot sand has reached its maximum extent along the east side in and around the town lot area, there are also numerous wells in the south portion, and some oil has been found on the north and west flanks at this depth. The deep production, however, is all limited as yet to the east side of the field, 300 to 4500 feet beyond the proven limits of the 3700-foot horizon.

By the middle of April, 1930, approximately 130 oil producing wells had been completed at Refugio. Of that total 10 were deep producers and the others were 3700-foot wells.

Over half of the 3700-foot production has been developed in and immediately adjacent to the town lot area of the east side of the field. In that locality there is one well at the center of nearly every town block, or lot, the wells being, therefore, only about 400 feet apart, or with four wells to what may be considered a rational drainage unit of 10 to 12 acres for one well.

In the heart of that over-drilled area the oil producing zone has reached a width of about six locations. Wells drilled farther out have encountered salt water in troublesome quantities, finding the sand somewhat too low.

In one portion of that over-drilled sector there is a rectangular area approximately 2000 feet wide and 5000 feet long (230 acres) on which 50 producing oil wells have been completed. And immediately north of that area is a narrow strip 500 feet wide and 5000 feet long (57 acres) with 18 producing wells. Incidentally, it is within this highly developed district that many of the wells that have quit producing are located.

Due west of the most southerly of the above mentioned group of 50 wells is another group consisting of eight wells located within an area 1250 feet, north to south, by 1500 feet east to west (43 acres).

On the southeast flank of the 3700-foot oil sand belt there is a group of five wells located within a space 1000 feet wide and 1500 feet long (34 acres).

A larger group, located on the southwest flank and including 18 wells, can be included in a rectangle 500 feet by 2500 feet (29 acres).

Three wells on the west flank fall along a straight line 1500 feet long. Considering them as draining a strip 500 feet wide, they represent a producing area of 17 acres.

On the northwest flank of the field there are three wells located within a rectangle 1000 feet long and 500 feet wide (11 acres).

11,256 Barrels Per Acre

The above groups represent nearly all of the 3700-foot production at Refugio with the exception of various isolated wells. Summing up, it is seen that practically all of the 3700-foot wells thus far completed are included in a total area of 421 acres. Making ample allowance for the isolated wells, the total producing territory is less than 450 acres, now being drained by some 103 wells, or one well to a general average of four acres. As 4,739,109 barrels of oil had been produced from these 421 acres on April 1, 1930, the general average production to that date was 11,256 barrels per acre.

That figure conforms rather closely to productive acreage around the salt domes. In the issue of September 2, 1927, THE OIL WEEKLY published a table showing production per acre in Gulf Coast fields, and among other figures that table showed 275 productive acres at West Columbia, which led with a yield per acre of 233,828 barrels, 333 productive acres at Spindle Top, 880 at Goose Creek, 242 at Jennings, Louisiana, 547 acres at Hull. At Humble, with production extending over the top of the dome and around the edges, there were 1870 productive acres. Including the gas production on top of the structure, Refugio would have an actually producing area of approximately 4500 acres, down to the 3700-foot horizon.

Although as figured above, the 3700-foot oil producing area around the flanks of the gas bearing structure has the extent of approximately 450 acres; a somewhat greater area may safely be considered as proven, for additional wells will likely be completed along the outer edge of present production. Making the ample allowance of an additional width of 500 feet, the proven territory on that basis would include 115 more acres on the east flank, 17 acres on the southeast flank, and 29 acres on the south and southwest flank—a total addition of 161 acres. That added to the 450 acres arrived at above as actually producing, would give a total of 611 proven acres for the 3700-foot horizon. No extra proven acreage is included for the west and northwest flanks of the field inasmuch as the drilling in those sectors has been limited, and they are more or less unknown quantities. Ultimately, no doubt, there will be additional productive territory in those portions of the field.

With regard to the oil wells producing from the deep sands it would be difficult to arrive at any practical estimate of proven acreage, for the drilling has been limited. While the 5800-foot wildcat producer, Union Producing Company's M. F. Lambert 1, is located off to the northeast, the other nine deep wells are fairly lined up along a curve running about parallel with the 3700-foot wells at a distance of approximately a mile to the eastward.

The most southerly of the deep producers is Union Producing Company's Mitchell 2, one of the 5500-foot wells. From that producer to the most northerly of the 5500-foot wells, Union Producing Company's O'Brien 1, the "O'Brien" sand discovery well, is a total distance of approximately 6500 feet. Within that distance the eight "O'Brien" sand wells are located. Union Producing Company's Rose Lambert 1-A, the new 6500-foot producer, is about 3000 feet north of the nearest of the "O'Brien" sand wells. From that 6500-foot well to the wildcat producer, M. F. Lambert 1, it is approximately 8500 feet.

Geology

All of the previous gas production at Refugio has been obtained from non-marine sands of Miocene age — sands which have contributed large quantities of oil production in the coastal salt dome

Tents have been pitched on vacant lots in Refugio to provide living quarters for part of the large population attracted by the rapid drilling of the oil field

fields. The 3700-foot oil sand at Refugio is commonly considered to be in the basal part of the Miocene or possibly in uppermost Oligocene. For a while there was some difference of opinion among geologists as to the ages of the deeper sands, but it is now the concensus that the 5500- and 5800-foot sands, and even the 6500-foot sand, are in the lower portion of the Oligocene, or Frio formation. It is considered that the Upper Eocene, Fayette-Jackson, has not been penetrated, although the depth of 6500 feet has been attained.

A large portion of the production from Gulf Coast salt domes has been from the Oligocene, and some around the domes has been from the Jackson and upper Claiborne, Yegua and Cook Mountain formations. It appears probable that those deeper formations may be reached at Refugio in the event it should be decided to drill wells to the depth of 9000 feet or more.

Refugio has been compared above with the other Gulf Coastal fields in view of the fact that it is producing from the Oligocene and the Miocene, like most of the dome fields, and since it is located within the Gulf Coast region, although in the southern end. Since it was primarily a gas field for a long period, however, it differs from other Gulf Coast fields in that respect.

It more closely resembles Goose Creek than any other Gulf Coast field. Both are of large area, and in neither field has a salt dome been drilled into. The outstanding difference between them is that Refugio has non-marine formations of Miocene and Oligocene age, producing gas, largely; while Goose Creek has more or less marine formations of the same relative age, with oil. But considerable gas was in evidence, also, at Goose Creek during the early development there.

Refugio also bears considerable resemblance to Raccoon Bend, Austin County, which is producing both oil and gas. While it is possible that both Refugio and Raccoon Bend are over deep-seated salt masses, the general assumption, however, is that they are both structural fields.

Aside from the four oil sands which are at present producing at Refugio there are various intermediate sands which may eventually prove productive. In Mission Drilling Company's J. F. B. Heard 1 considerable coring was done around 4100 feet, revealing several sand sections carrying slight amounts of oil. Probably the most promising of the itermediate non-producing sands, however, is one found around 5100 feet. It was present in Union Producing Company's O'Brien 1, the discovery deep well, in Saxet Oil Company's Ryals 1, Morgan Oil Corporation's (now Moody-Seagraves Producing Company's) Tom Heard 1, Block 3, and Houston Oil Company's Tom Heard 1, Block 16. In each of those wells it was cored and found to be carrying oil and gas to some extent but was not tested in any instance. In the opinion of at least one operator, that 5100-foot sand looked good enough to be classed as a probably productive horizon.

Between the 5100-foot sand body and the so-called 5500-foot sand several fairly good sands were cored in Saxet Oil Company's Ryals 1. The "O'Brien" sand itself is found between 5400 and 5500 feet.

The next deeper intermediate sand of importance was a heavy gas sand at 6250 feet in Independent Oil & Gas Company's O'Brien 1. It appears that that sand may carry oil on the flank.

Independent Oil & Gas Company's same well also encountered a gas sand at 6385 feet. In fact, when this test failed to develop production at 6489 feet in the sand from which Union Producing Company's Rose Lambert 1-A is producing, it was decided to plug back to 6480 feet in the event of another failure to rip the pipe and make a gas well at 6247-6385 feet. It has been subsequently decided, however, to drill ahead in search of still

Tentative Stratigraphic Section of the Refugio Field

(A stratigraphic section of the Refugio field may be indicated as follows in terms of the formation names commonly used for the generally recognized subdivisions of the Tertiary sediments of the Gulf Coastal province of South Texas.)

Age	Formation	Depths	Thickness	Remarks—
Upper Pleistocene	Upper Lissie	0- 350	350	Limey or redeposited caliche clays. Sandy clays, sands and a few gravel lenses. Fresh sulphur water at 350 feet.
Middle Pleistocene	Lower Lissie	350- 750	400	Gumbos, sandy clays and lenticular beds of sand that often are cemented into rock by lime. Fresh water.
Lower Pleistocene	Reynosa	750-1150	400	Sands, sandy clays, and clays. Contain the chief artesian fresh water bearing sands of the district.
Pliocene	Lagarto-Lapara	1150-1600	450	Gumbos, sandy clays and sands. Lenses of Lapara sands at base (1550-1600 feet) contain some gas locally.
Upper Miocene	Oakville	1600-2450	850	Non-calcareous sands and sandy clays. The upper gas bearing series of the field.
Middle Miocene	Gueydan	2450-3325	875	Non-calcareous sandy clays and sands containing appreciable amounts of volcanic ash materials. Contains gas in middle (2840) and basal (3200-3300) sands.
Lower Miocene (and-or) Upper Oligocene	Catahoula? Catahoula?	3325-3425 3425-3950	625	Calcareous sands, sandy shales, and shales with gas-bearing sands in upper part (3325-3450) and gas and oil-bearing sands in the middle portion at depths between 3600 and 3700 feet. The oil-bearing sands (3650-3700 feet) contain water worn fragments of marine shells indicative of strand line or beach deposition.
Middle Oligocene	Marine Oligocene	3950-4360	410	Marine limestone and shales containing Heterostegina and associated forams.
Lower Oligocene	————	4360-4625	265	Calcareous semi-marine sands and shales.
Lowermost Oligocene	Frio (Transition)	4625-5400	775	Chiefly non-calcareous sandy shales, sands and shales.
Upper Eocene	Frio-Fayette?	5400-6500	1100 plus	Chiefly non-calcareous sandy shales, shales and sands with traces of lignitic material, but also contains some limey, semi-marine sediments with ostracods (below 5900). Contains oil-bearing sands at 5450-5500, 5880-5900, 6450-6460 feet.
Upper Eocene	Jackson			The Jackson formation has not been recognized in this field to the depth of 6500 feet, but is to be expected within the next 1000 feet (6500-7500).

deeper sands and a drill stem test is now being made of a sand showing oil at the depth of 6601-07 feet.

Drilling Practice

All drilling at Refugio is done with rotary rigs.

One of the outstanding features of drilling practice in the field is the extensive application of coring. Union Producing Company, one of the largest operators there, makes the practice of coring everything that does not have to be spudded—everything besides sticky shales and gumbos. On M. F. Lambert 1 that company took 53 cores, beginning at 1250 feet. Although fish tail bits are used widely rock bits also are needed to considerable extent to make a full gauge hole through hard formation.

Drill stem testers also find wide application at Refugio. A test of that kind is usually made by any company there when a sufficiently promising sand is encountered. In M. F. Lambert 1, Union Producing Company used drill stem tester on a gas sand at 3502-08 feet, and also on the 5800-foot oil sand before setting casing. Oil sands are generally cored before screen is set and completion tests are made.

Union Producing Company has six rigs of its own at Refugio, Houston Oil Company has several of its own there, and a few independent operators are doing their own drilling, but with these few exceptions all drilling in the field is being done on contract basis. On April 10 there were 49 rigs in the field, and all were in use. The names and addresses of the various owners of drilling rigs are listed in an accompanying table.

Drilling Rigs At Refugio

Name and address of owner—	No. rigs in field
Kepley Production Company, Laredo, Texas	5
Mission Drilling Company of Texas, Refugio	1
George E. Smith, San Antonio	1
L. L. Smith, Refugio	2
Rutherford Drilling Company, Refugio	2
Edwin M. Jones, San Antonio	2
Carpenter Drilling and Development Company, Houston	2
Benson & White, Refugio	1
Korona Oil Company, Refugio	3
Baker & Morgan, Refugio	2
Coast Drilling Company (T. P. Morgan), Refugio	7
D. & H. Drilling Company, Refugio	1
Houston Gulf Gas Company, Houston	6
Luling Oil & Gas Company, San Antonio	1
Stroube & Stroube, Corsicana	2
Refugio Oil Corporation, Refugio	1
R. A. Wolfe, Houston	3
Dr. W. E. Hewitt, Beeville, Texas	1
W. B. Hillegeist, Refugio	1
Young & Heaslip, Refugio	1
Ben Coyle, Refugio	1
Coyle & Jones, Houston	1
Houston Oil Company, Houston	2

The average price paid for drilling of the 3700-foot wells is around $4 per foot,

Refugio Oil Production by Leases

Showing total recovery of field by leases, as of April 1, 1930, together with March and February production for purposes of comparison. First column shows total number of wells, by leases, which had produced oil prior to April 1, although at that time some of them were dead, being temporarily or permanently off production. Two last columns show status of production at middle of April.

Producer—	No. Wells on lease April 1	March Prod.	Feb. Prod.	Total Prod. by leases to April 1	Average Daily Prod. Week ending April 17 No. wells	Net oil
Benedum-Trees Oil Company—						
Clint Heard (Nos. 1, 2, 3)	3	6,116	5,889	165,392	1	185
F. B. Rooke (No. 2)	1	6,638	6,316	70,396	1	217
Total	4	12,754	12,205	235,788	2	402
Fox & Heflin, Fannie Heard	1	2,419	.....	2,419	1	551
Dr. W. E. Hewitt—						
Cemetery (Nos. 1, 2)	2	2,614	2,390	23,442	1	114
Houston Oil Company—						
Carlysle, Block 33	1	9,135	.....	9,135	— dead —	
Fox Heirs, Block 77	1	35,843	35,144	70,987	1	783
F. V. W. (Fannie) Heard (Nos. 6, 12)	2	3,979	4,010	27,803	2	131
Wilson Heard (Nos. 5, 8, 9)	3	3,290	3,254	83,009	2	107
Rea (No. 2)	1	3,518	2,745	6,263	1	105
Rooke (200-ac. Nos. 10, 12, 13)	3	32,630	23,930	261,645	3	961
Rooke (472-ac. Nos. 6, 10, 12)	3	18,335	15,994	104,590	3	619
Rooke (36-ac. tr.)	1	2,015	2,199	20,717	1	68
Helen Ryals (Nos. 1, 2)	2	2,423	2,545	75,645	1	75
Scott, Block 92	1	9,483	22,737	38,079	1	181
Shelton, Block 100	1	3,805	.....	3,805	1	369
Rooke, Block 48	.	.....	.....	.....	1	779
Dorsey, Block 78	.	.....	.....	.....	1	588
Leisering, Block 55	.	.....	.....	.....	1	306
Wheeler, Block 50 (was Refugio Oil Corp. lease)	1	24,021	.....	24,021	1	772
Rutherford (was Heep Oil Corporation lease)	1	52,789	36,525	89,314	1	262
J. T. Vance (was Heep Oil Corporation lease)	1	22,675	.....	22,675	— dead —	
Total	22	223,941	151,083	837,688	21	6,106
Independent Oil & Gas Company—						
Claude Heard (Nos. 1, 2, 3)	3	46,194	44,440	123,231	3	2,231
J. F. B. Heard "B" lease	2	13,077	.....	15,013	1	396
Jerry Reilly (Nos. 1 to 5)	5	17,832	19,342	80,932	4	458
West (Nos. 1, 2)	2	18,465	27,427	118,825	2	484
Total	12	95,568	91,209	338,001	10	3,569
Edwin M. Jones—						
Leisering, Block 49	1	14,783	635	15,418	1	752
Korona Oil Company—						
Zarsky, Block 91	.	.....	.....	.....	1	148
Larcro Gas & Petroleum Co.—						
Strauch (Nos. 1, 3)	2	25,081 (Feb. & Mar.)		25,081	2	731
Moody-Seagraves Producing Company—						
Rooke (No. 2, was Union Exploration Company lease)	1	2,614	2,367	14,892	1	85
O'Brien (No. 1, deep, was Mission Drlg. Co. lease)	.	.....	.....	.....	1	1,530
Total	1	2,614	2,367	14,892	2	1,615
T. P. Morgan—						
Fox Heirs, Block 70	1	8,128	.....	8,128	1	492
Morgan Oil Corporation—						
City of Refugio (Nos. 1 to 5)	5	82,369	65,598	313,519	5	2,565
Fox Heirs, Block 71	1	30,431	33,491	67,076	1	1,120
Fox Heirs, Block 72	1	24,719	30,455	76,824	1	705
Fox Heirs, Block 75	1	3,345	4,994	73,394	1	104
Fox Heirs, Block 76	1	4,912	8,594	48,802	1	102
Fox Heirs, Block 114	1	1,007	2,409	41,439	workover	
Johnson	1	3,546	4,108	20,923	1	74
Strauch	1	219	1,713	18,039	1	551
Swift et al	1	29,438	16,665	46,103	1	773
Tom Heard 1, Block 3 (deep)	1	7,398	.....	7,398	1	373
Carlysle 1, Block 2 (deep)	.	.....	.....	.....	1	112
Total	14	187,384	168,027	713,517	14	5,849

(Continued on page 56)

Refugio Oil Production by Leases

(*Continued from page 55*)

Producer—	No. Wells on lease April 1	March Prod.	Feb. Prod.	Total Prod. by leases to April 1	Average Daily Prod. Week ending April 17 No. wells	Net oil
Pearson Properties, Incorporated—						
Babb et al	1	14,580	12,712	54,183	1	318
Fox Heirs (40-ac. Nos. 1, 2)	2	29,523	28,848	137,410	1	464
Claude Heard, Block 27	1	9,521	13,867	27,476	1	266
Simpson	1	8,076	8,415	84,591	1	219
Swift et al	1	3,667	5,435	34,297	1	79
Johnson 1, Block 11	.	.....	.....	.....	—	dead —
Ryals (No. 1, deep)	1	13,357	.....	13,357	1	1,477
Total	7	78,724	72,778	351,314	6	2,823
Refugio Oil Corporation—						
Murphy (Nos. 1, 2)	2	90,158	120,770	406,989	2	2,569
Saxet Oil Company—						
Holmes Heard (No. 2)	1	.....	.....	29,279	.	....
Clint Heard (Nos. 4, 6, 8, 9, 10)	6	24,618	20,341	269,885	4	697
City, Block 74	1	458	2,988	43,586	1	81
Fox Heirs, Block 95	1	239	3,626	66,424	1	118
Powers, Block 3	1	19,248	13,676	107,582	1	425
Serafino	1	233	1,282	5,387	—	dead —
Cable, Block 20	1	25,114	10,078	35,192	1	558
Ryals (No. 1, deep)	1	37,760	.....	71,452	1	1,130
Total	13	107,670	51,991	628,787	9	3,009
Sun Oil Company—						
Buckley (No. 2)	1	16,286	32,219	84,630	—	dead —
Johnson	1	1,184	.....	14,762	1	91
Leisering (Nos. 1, 2)	2	8,125	38,763	105,793	1	162
Rea (Nos. 1, 2)	2	8,029	5,779	89,446	4	312
Total	6	33,624	76,761	294,631	6	565
The Texas Company—						
Clint Heard	1	272	265	1,034	1	9
Texas Gas Company—						
Rogers, Block 116	1	2,277	3,501	24,182	1	56
Union Producing Company—						
Henry Heard, Block 99	1	6,366	5,141	25,171	1	263
Dabney Fee	1	32,844	24,819	138,087	1	1,112
Eskridge Heard	1	12,276	6,997	32,228	1	477
Fox Heirs	1	gas	gas	5,460	—	gas —
Huddleston	1	3,576	2,941	56,452	1	142
Kuykendall, Block 93	1	4,802	5,075	34,838	1	142
J. F. B. Heard (No. 2)	1	8,339	236	8,575	1	364
Julia Shay	1	20,318	7,287	53,588	1	484
T. P. Shelly (Nos. 1, 2, 3)	3	4,756	3,611	26,168	4	492
Strauch, Block 98	1	1,781	2,230	34,045	1	26
O'Brien (No. 1, deep)	1	17,088	14,842	76,372	1	657
Mitchell (No. 2, deep)	1	16,112	15,715	45,873	1	551
Powers (No. 2, deep)	1	3,643	732	4,375	1	229
Rose Lambert (No. 1-A, deep)	.	.....	.....	.....	1	62
Following wells formerly under name of Houston Gulf Gas Company						
Cummings (Nos. 1, 2, 3)	3	20,103	14,042	120,382	2	1,392
Shelly (Nos. 7, 8)	2	21,787	16,868	91,955	2	751
N. J. Ryals (Nos. 4, 5)	2	4,340	4,679	39,983	2	169
Fannie Heard (No. 7)	1	1,318	1,160	9,701	1	47
Morgan-Shelly (Nos. 1, 2)	2	48,794	48,533	137,877	1	454
Morgan-Vance (Nos. 1, 2)	2	25,238	15,367	81,852	1	1,995
M. F. Lambert (No. 1, deep.)	1	48,558	3,155	51,713	1	1,103
Total	28	302,041	190,275	1,074,695	26	11,979
Field Total	118	1,192,052	944,257	4,996,006	107	41,339

NOTE: A survey made April 17, 1930, showed 23 former oil producing wells dead at that time, although some of them were to be worked over. They were as follows:

Benedum-Trees Oil Company: Clint Heard 1; Clint Heard 3.

Houston Oil Company: Carlysle 1, Block 33; Vance 1; Wilson Heard 4; Wilson Heard 5; Wilson Heard 7; Helen Ryals 2.

Independent Oil & Gas Company: Jerry Reilly 2; Anna Reilly 1.

Morgan Oil Corporation: Fox Heirs 1, Block 114.

Pearson Properties, Inc.: Fox 1; Johnson 1, Block 11.

Saxet Oil Company: Serafino 1; Clint Heard 4; Clint Heard 5; Clint Heard 11; Holmes Heard 2.

Sun Oil Company: Leisering 2; Buckley 2.

Union Producing Company: Morgan-Vance 2; Morgan-Shelly 2; Cummings 3.

In addition there were two, Union Producing Company's Morgan-Shelly 1 and Fox 1, which had produced some oil but which were then producing only gas.

and for the deep wells around $5. The cost of a completed 3700-foot well is approximately $30,000. That includes cost of the derrick and casing, but no pumping equipment.

Only a few wells in the field are producing water along with the oil. The deep wells are in no instances making over three per cent water, and are, for the most part, producing no water. The shallower wells, likewise, are producing pipe line oil for the most part. On April 1, 1930, Independent Oil & Gas Company, with a total of 10 wells with a daily yield of 4093 barrels, had only one well which was yielding water: Heard B-1, which produced 80 per cent water and yet yielded 428 barrels net oil, no chokes being used and the pressure being 50 pounds. This well was yielding about the greatest flow of water of any producer in the field. At the same time Union Producing Company's Dabney Fee 1 was yielding about 75 per cent water, but had been doing so practically since its completion in September, 1929, and yet was one of the best wells in the field, still producing over 1000 barrels net oil daily, with almost 150,000 barrels total recovery to its credit already.

Even where it does occur in wells at Refugio the water gives rise to no particular difficulty. It is readily separated from the oil, usually through the use of Tretolite or other chemicals.

Just above the 3700-foot oil sand there is a gas sand, usually 30 to 40 feet in thickness, and it is necessary to go through that to set casing. It offers no trouble when there is a break between the gas sand and the oil sand, but in some cases the two sands are not separated. In such event completing the well is a delicate job, and if the screen is placed only slightly too high the well will be a gas well instead of an oil producer.

Advantageous Transportation

From the transportation standpoint the Refugio field is advantageously situated, both with respect to obtaining materials for drilling and production operations, and with regard to disposal of the crude oil that is produced, being partially in the town of Refugio, which is on the St. Louis, Brownsville & Mexico Railroad, and at the same time being only about 30 miles from tidewater, to which it has been connected by pipe lines.

Two supply companies, Continental and Hercules, maintain large well-stocked stores at Refugio. R. L. Collier is manager of the Continental Supply Company store, and D. H. Connelly is manager for Hercules Supply Company.

Refugio is approximately 135 miles southeast of San Antonio, and about 200 miles southwest of Houston. It is not connected by hard surfaced road with any main highway in that part of the state, and it is difficult of access by motor vericle during rainy weather. During dry weather it is easily reached from Victoria, Beeville or Goliad, towns on the Beeville-Houston highway, which is about 30 miles to the north. It may also be reached from Sinton, which is about 25 miles to the southwest on the San An-

tonio-Brownsville hard surfaced highway. A motor bus service was recently instituted between Corpus Christi and Refugio by way of Sinton, a total distance of about 50 miles. The road between Sinton and Refugio is being improved, and will be paved eventually as part of a main highway along the coast.

The town of Woodsboro is located about seven miles south of Refugio on the way to Sinton and Corpus Christi, being on the railroad and on the highway. Located only a short distance south of the southern edge of the Refugio field, Woodsboro has developed into an important center during the oil development, serving not only as a shipping point for materials used in that end of the field but also as the dwelling place for numerous people employed in the field, relieving the crowded conditions at Refugio.

Pump station of Gulf Coast Pipe Line Company in south part of Refugio field

Pipe Lines and Steel Storage

The first pipe line outlet for Refugio crude was provided in 1929 when the Gulf Coast Pipe Line Company, owned by William F. Morgan and associates, built a six-inch line to Port Aransas by way of Bayside, a distance of 32 miles. Port Aransas is on the Gulf of Mexico below Corpus Christi. The oil was loaded there onto deep-draught ships. In February, 1930, Gulf Coast Pipe Line Company finished looping the original line, using eight-inch pipe for the second line. Shortly afterward the ownership of the pipe line company was acquired by the Moody-Seagraves interests of Houston, by whom it is owned at present. That pipe line system is operating almost at capacity, moving around 32,000 barrels of oil to tidewater daily. In connection with it, the company has four 55,000-barrel steel tanks and two 80,000-barrel steel tanks on a tank farm adjacent to the pipe line pump station in the south end of the Refugio field and seven 55,000-barrel steel tanks at the tanker loading terminal. In the pump station there are two 240-horsepower Fairbanks-Morse Diesel engines driving two 4⅞ x 24 Prescott Menominee pumps of 12,000 barrels daily capacity, and one 180 horsepower Fairbanks-Morse Diesel engine driving a Prescott 4¾ x 24 pump of 10,000 barrels daily capacity.

The above pipe line system was the only one serving Refugio oil producers on April 15, but Humble Pipe Line Company had nearly completed construction of an eight-inch line to the Humble Oil & Refining Company refinery at Ingleside on the coast, a total distance of 28 miles. That line was expected to be in operation on or about April 25. Aside from crude which it will use in the Ingleside plant, Humble Oil & Refining Company expects to make shipments of Refugio crude from its large tanker loading docks at Harbor Island near the refinery.

Steel Storage At Refugio

Aside from the tanks owned by Gulf Coast Pipe Line Company there was some additional steel storage in the Refugio field early in April. Tankage at that time included the following:

Company, Tanks—	Total Capacity Barrels
Gulf Coast Pipe Line Company, Two 80's	160,000
Gulf Coast Pipe Line Company, Four 55's	220,000
Independent Oil & Gas Company, One 80	80,000
Houston Oil Company, Six 55's	330,000
Total, 13 tanks	790,000

In addition there are some 5000- and 10,000-barrel tanks at the loading racks.

Marketing by Rail

In addition to pipe line runs, large quantities of Refugio crude have been marketed in the past through tank car shipments over the Missouri Pacific lines. Rail shipments assumed importance the latter part of 1929 and increased steadily during the first three months of 1930, amounting to about 120 cars, or two trains, daily at the opening of April. In January total shipments included 1304 cars, with average capacity of about 200 barrels each, or a total capacity of approximately 260,800 barrels; in February, 1951 cars were shipped out, moving roughly 390,200 barrels; and in March the shipments amounted to approximately 2600 cars or 520,000 barrels.

Those shipments were made to Toledo, Ohio, to Chicago and Roxana, Illinois, and to numerous points in Iowa, Wisconsin, and other states in the Middle West. About 10 to 15 cars daily were being shipped to Corpus Christi, Texas, the latter part of March, and some of the high gravity oil was being shipped to United Gas Company's refinery at Laredo, Texas. Rail shipments at that time were greatly encouraged by the low prices prevailing for Refugio crude. For a short time prior to April 1 the posted price of the heavy oil was 62½ cents per barrel, and previously the price was only 55 cents for about two months. The high gravity oil, during that period was purchased on a scale of 95 cents to $1.10 per barrel for crude ranging from 30 gravity to 35 and above.

Purchasing shippers late in March included Shell Petroleum Corporation, shipping about 25 cars daily; Humble Oil & Refining Company, also shipping around 25 cars daily, largely to the Toledo refinery of Standard Oil Company of Ohio; Independent Oil & Gas Company, 15 to 20 cars daily; Sun Oil Company, about 10 cars daily to its refinery at Toledo, Ohio; Saxet Oil Company and Union Producing Company, about five cars daily, and Houston Oil Company shipping around 10 cars of its own production daily and handling other large shipments over its rack, which accommodates 42 cars at a time. Over that rack Houston Oil Company loaded the shipments of Shell Petroleum Corporation and various other shippers, as well as its own production; during February 326,000 barrels were loaded at that rack. Humble Oil & Refining Company late in March was using a rack with capacity of five cars, and loading rack capacities of other companies included Union Producing Company, five cars, Saxet Oil Company, six, Independent Oil & Gas Company, eight cars, and Houston Gulf Gas Company, 10 cars.

Railroad traffic in Refugio crude has passed its zenith, by now, however, two successive price increases having been made for the oil during April, with additional pipe line outlet in prospect for the field before the end of April.

As this is written the crude prices which went into effect April 10, 1930, are still in effect. The posted price for the heavy oil, below 25 gravity, is 85 cents per barrel, and the schedule for the light oil provides a price of $1.03 per barrel for 25 to 25.9 gravity, with three-cent differential to $1.42 for 38 to 38.9 gravity, then a two-cent differential to $1.54 for 44 gravity and above. That light oil price schedule is exactly the same as the Grade "B" Gulf Coast crude price posting from 25 gravity up.

Production

Monthly production at Refugio exceeded 1,000,000 barrels for the first time

in March, 1930, the yield for that period being 1,192,052 barrels from 118 wells. That represented an average of 10,102 barrels per well for the month, or 325.8 barrels per well per day.

During the latter part of March the field established a production peak which it has not since equaled, the daily average for the week ending March 29 having been 43,950 barrels.

By the close of April total oil recovery at Refugio will probably have exceeded 6,000,000 barrels. The record of production since completion of the discovery oil well July 28, 1928, has been as follows:

Period—	No. Wells	Barrels Prod.
August, September and October, 1928	1	35,087
November	2	9,946
December	5	16,252
Total, 1928	5	61,285
January, 1929	6	23,691
February	7	37,006
March	10	26,094
April	12	63,823
May	13	58,746
June	17	83,062
July	18	111,592
August	19	133,963
September	38	181,162
October	51	327,201
November	67	443,880
December	80	502,734
Total 1929	80	1,992,954
January, 1930	84	784,382
February	94	973,604
March	118	1,192,052
Total 1930 through March	118	2,950,038
Grand total		5,004,277

The above figures are based largely on pipe line runs and tank car shipments, have been carefully checked, and are as accurate as production figures may practically be. Production by leases is given in an accompanying table.

To show the production trend for the past two months the following table, based on American Petroleum Institute estimates, is presented:

Week ending—	Average Daily Production
March 1	36,300
March 8	37,400
March 15	38,200
March 22	39,200
March 29	43,950
April 5	40,100
April 12	38,900
April 19	40,850

Production Declines

The production decline which set in at the beginning of April was accounted for partially by decreased drilling in the already over-drilled town lot area, and in part by the fact that an increasing number of wells, particularly in the town lot district, were ceasing to produce because of lowered pressures and of sanding up. The "dead" wells are listed in an accompanying table. They numbered 23 on April 11, 1930, although some of them were to be worked over and probably put back on production.

Production from the deep sands is now assuming important proportions, but of the 5,000,000 barrels produced at Refugio prior to April 1 only 270,540 barrels had come from those sands, all the rest being from the 3700-foot horizon.

Among those shallower wells there have been some exceptionally good producers. The most prolific of all have been the two of Refugio Oil Corporation, No. 1 and No. 2, on the Murphy lease in the east portion of the field. During March, 1930, they produced 90,158 barrels, bringing the accumulated production total to 406,989 barrels up to April 1. Murphy 1 was completed October 29, 1929, and Murphy 2 came in December 13, 1929. The monthly production totals for the lease have been as follows:

Refugio Oil Corporation's Murphy lease, two wells—

Month—	Barrels Production
October, 1929	3,810
November	27,484
December	22,460
January, 1930	142,307
February	120,770
March	90,158
Total through March	406,989

Two other outstanding wells of the field, from the production standpoint, are Union Producing Company's Dabney Fee 1 and Saxet Oil Company's Powers 1, Block 3, each of which has produced over 100,000 barrels and is still a good producer. The former was completed September 11, 1929, and the latter October 13, 1929. Their production histories are revealed in the following table:

Month—	—Barrels Production— Union Prod. Co., Dabney Fee 1	Saxet Oil Co. Powers 1, Blk. 3
September, 1929	6,682	.....
October	13,571	12,865
November	16,284	20,914
December	19,463	16,269
January, 1930	24,444	24,610
February	24,819	13,676
March	32,844	19,248
Total through March	138,087	107,582

The figures for Union Producing Company's Dabney Fee 1 are particularly interesting, showing continued, steady increase of production for seven months. There have been numerous other wells at Refugio which have likewise showed steady increases in production over long periods, indicating common tendency of the wells to "drill themselves in." Incidentally, the above record well of Union Producing Company is one that has been noted throughout its history for its high water yield; it was producing around 75 per cent water at the close of March, 1930. Evidently it is a natural water drive well as is also the Cummings 1, which came in flowing 90 per cent water in February, 1928, and has produced over 100,000 barrels of oil.

Aside from the above wells there have been several others at Refugio which have yielded over 100,000 barrels of oil and numerous ones have produced over 75,000 barrels. Production totals for some of the best wells through March include 89,314 barrels for Heep Oil Corporation's Rutherford 1; 84,591 barrels for Pearson Properties' Simpson 1; 84,630 barrels for Sun Oil Company's Buckley 2; and 76,824 barrels for Morgan Oil Corporation's Fox 1, Block 72. All the above named more prolific wells are still producing, with exception of that of Sun Oil Company.

Inasmuch as interest in directed now principally to the deep sand development, the general production history of the 10 deep wells is presented in a special accompanying table.

The total of 7216 barrels shown in the above table as the day's production on April 11 represented almost one-fifth of the production of the whole field, although the 10 deep wells constituted less than one-tenth of the total number of wells in the field. While the daily production from the deep wells represented an average of 721.6 barrels daily per well, the daily average for the wells of the field as a whole at the same time was only 385.7 barrels.

Additional interesting information is revealed in the individual production records of some of the wells. Such figures are herewith given for Union Producing Company's O'Brien 1, discovery well of the 5500-foot sand, completed September 26, 1929.

Month—	Barrels Production
October, 1929	5,422
November	10,129
December	14,168
January, 1930	14,723
February	14,842
March	17,088

These figures illustrate the fact that the deep wells, like many of the shallower wells, ordinarily continue increasing in production over long periods.

Two Large Operators

Information as to the various operators interested in the development of the oil production at Refugio is revealed in the accompanying lists of wells drilled in the field, in the table showing production there by leases, and in the drilling report. Union Producing Company and Houston Oil Company stand out as the largest individual operators. It was those two concerns which largely developed the Refugio gas field, the present Union Producing Company having evolved out of the original natural gas properties of the Moody-Seagraves interests. Having the extensive lease holdings acquired during the gas development, they have taken the lead in the oil development. Each has approximately a dozen wells drilling. During March, 1930, Union Producing Company led the field in production, obtaining 304,655 barrels from 29 wells. Houston Oil Company followed next in number of wells, 19 producers yielding 124,456 barrels. But Moody-Seagraves Producing Company ranked second in production, with 187,384 barrels for the month from 14 wells. Moody-Seagraves Producing Company is owned by interests

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PRODUCTION OF DEEP WELLS AT REFUGIO

Company and well—	Daily Prod. April 11	March Prod.	Feb. Prod.	Total Prod. to April 1
Union Producing Company—				
O'Brien 1	630	17,088	14,842	76,372
Powers 2	215	3,643	732	4,375
Mitchell 2	556	16,112	15,715	45,873
M. F. Lambert 1	1,170	48,558	3,155	51,713
Rose Lambert 1-A	160	.....	.....	.....
Moody-Seagraves Producing Company—				
Tom Heard 1, Block 3	371	7,398	.....	7,398
Carlisle 1, Block 2	101	.....	.....	.....
O'Brien-Mission 1	1,402	.....	.....	.....
Pearson Properties, Inc.—				
Ryals 1	1,383	13,357	.....	13,357
Saxet Oil Company—				
Ryals 1	1,228	37,760	33,692	71,452
Total	7,216	143,916	68,136	270,540

(Note: the above table does not take into consideration two newly completed wells, finished April 22—both by Houston Oil Company. Doughty 1, Block 23, came in flowing 75 barrels of 70 gravity oil daily, showing 2000 pounds pressure, and Tom Heard 1, Block 16, came in flowing 100 barrels of the light, 70 gravity oil daily, registering 1950 pounds working pressure).

which are also large owners of Union Producing Company, but although it has considerable production at present, it is now operating only four rigs. Independent Oil & Gas Company is another concern interested largely in the Refugio oil development. In March, 1930, it had 12 producing wells which yielded 95,568 barrels; it is among the largest lease owners, and at the middle of April was the third most active company in the field, with nine drilling operations. Pearson Properties, Incorporated, and Saxet Oil Company were interested to considerable extent in the past development, and have production now. March production figures showed a total of 16 producers in the field.

Refugio Gas Production

Although the main gas sand (or at least the one which was for a long time considered the main one) is at the depth of 2400 feet, there are numerous gas producing horizons in the field. Commercial gas production was obtained in sands ranging from 1500 to 2450 feet, considered to be of upper Miocene age, Oakville formation, and good production has also been developed at depths between 3200 and 3700 feet, considered to be of lower Miocene and upper Oligocene age. Within limits of the gas producing area there have been few tests which went deeper than 4000 feet.

As stated previously in this article, a little over 4000 acres at Refugio have proved productive of gas, exclusive of the oil producing zones, in which heavy gas sands are penetrated in reaching the oil.

Refugio gas production is marketed by trunk pipe lines of two companies. Houston Pipe Line Company, subsidiary of Houston Oil Company of Texas, has a 12-inch line extending to its combination 16- and 18-inch line connecting Mount Lucas gas field, Live Oak County, and the Laredo district with Texas Gulf Sulphur Company's sulphur mines in Matagorda and Fort Bend Counties and with Houston and industries along the Houston Ship Channel. That line out of Refugio was put in operation in September, 1925. Houston Gulf Gas Company, now a property of the United Gas Company, was organized in August, 1925, by the Moody-Seagraves interests, and on May 12, 1926, it completed a 154-mile combination 14- and 16-inch gas line from Refugio to Houston. Since then the line has been extended to serve industries along the Houston Ship Channel. These two companies have been the principal gas producers at Refugio, in addition to transporting all the gas that the field has produced.

Total withdrawals of natural gas from the field by the two companies have been roughly as follows:

Year—	Cubic Feet
1925	1,821,000,000
1926	17,340,000,000
1927	18,785,000,000
1928	13,550,000,000
1929	12,956,000,000
1930 (3 months)	3,191,000,000
Total	67,643,000,000

The following table summarizes the field development for natural gas as well as for oil during all the history of the field. Wells listed as blowouts may be considered as having been potential gas wells that were lost. Failures include tests that were non-productive chiefly because of location outside of the productive area.

Year—	Completions	Oil wells	Gas wells	Blowouts	Failures
1920-24	9	..	2	4	3
1925	17	..	6	7	4
1926	46	..	31	2	13
1927	46	..	36	..	10
1928	39	5	28	..	6
1929	107	73	21	1	12
1930 (To April 22)	61	50	2	..	9
Total	325	128	126	14	57

The above figures through 1929 have been carefully checked and are known to be reasonably accurate, while those for 1930 are subject to corrections. The table does not take into consideration any wells other than new holes, although there have been numerous instances of working over or deepening wells.

The large number of productive gas sands at Refugio has been a distinguishing feature of the field, pointing to a particularly large ultimate yield of gas per acre. The largest gas well of the field, it is said, was Houston Oil Company's first test there, Rooke 1, which from 2392 feet tested 84,000,000 cubic feet daily production on open flow test. Because of the rather weak consolidation of the sands, however, that is, because they are soft or loose, none of the wells are allowed to flow open lest they be ruined by sanding up. In the early period of gas development there were several craters caused by blowouts, due to lack of proper equipment and experience, and in later stages some were caused by unexpectedly encountering gas which migrated through early blowouts from the original sands to shallow, upper sands.

Running across the Refugio field from west to east and dividing it into two approximately equal parts is a small stream named Mission River, and gas bubbles at several places along that river, coupled with hydrogen sulphide gas in fresh water wells in the vicinity, furnished the incentive for the first drilling in the area, the hope being entertained that oil would be found. The first test put down was Texas Gulf Oil & Gas Association's F. V. W. Heard 1, located two miles northwest of Refugio on the north side of the river at a point near the center of the present gas producing area. It was started in November, 1919, and drilled to 1902 feet by September, 1920, when it had a gas blowout that partially wrecked the rig. In January, 1921, it was cleaned out and reconditioned as a small gas producer for local use as fuel for another drilling rig. It gauged an open flow of 13,000,000 cubic feet and had a closed in pressure of 420 pounds.

Pratt-Hewitt Oil Corporation, another small company, entered the district in 1920 with the purpose of drilling for oil, and with the exception of a second test, a dry hole, by Texas Gulf Oil & Gas Association, drilled every subsequent test at Refugio up to 1925. During that five-year period Pratt-Hewitt Oil Corporation put down seven tests, including six on the F. B. Rooke land and one on the W. J. J. Heard. All but two of those seven tests went through various high-pressure gas sands, and several had damaging gas blowouts. Only one out of the whole group of nine wells drilled by the two pioneer companies just mentioned had gas production as the objective, and that one was simply for obtaining fuel for other drilling for oil. Yet seven of the nine may be considered to have been potential gas wells in at least one and possibly several of the sands encountered, if they had been properly cased and screened. The total cost of the nine wells was around $350,000.

Commercial Gas Development

Possibilities of commercial gas production at Refugio were not seriously considered until 1924, when O. R. Seagraves, who had previously entered the natural gas business by establishing a system for supplying Corpus Christi and nearby towns from the White Point field, made a preliminary contract with Pratt-Hewitt

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Main business section of town of Refugio as seen from Refugio County court house. Numerous derricks in background in town lot area

Oil Corporation covering purchase of all gas from leaseholds of the latter, contingent upon the Seagraves interests, building a pipe line to Houston, a distance of 154 miles. Growing out of that agreement, Houston Gulf Gas Company was organized by the Seagraves interests in August, 1925, and the proposed line was started. It was put in operation May 12, 1926. Original holdings of Pratt-Hewitt Oil Corporation have passed largely into the hands of Houston Gulf Gas Company, which after building its line from the field also began to drill.

Houston Oil Company, through its subsidiary, Houston Pipe Line Company, entered the Refugio field while the system of Houston Gulf Gas Company was being worked out. Houston Pipe Line Company had already built a trunk line from Mount Lucas, Live Oak County, to a point near Edna, Jackson County, and thence eastward to the Big Hill, Matagorda County, dome, where Texas Gulf Sulphur Company was supplied with gas for fuel in sulphur mining operations. The ultimate purpose of the company at that time was to extend the line also from Edna to Houston, and that has since been done. Following completion of the Mount Lucas-Big Hill line, Houston Pipe Line Company, to assure an ample supply of gas, entered the Refugio field, building a branch from the trunk line to Refugio, a 12-inch line 20 miles long. That line took the first gas out of the field, going into operation September 11, 1925. In connection with the pipe line to Refugio, Houston Oil Company also acquired extensive producing acreage there.

QUESTIONS

1. What effect has altitude on a quantity of natural gas designed as a "cubic foot"?
2. When is the ideal time to attempt a fishing job on a string of pipe stuck in the hole?
3. What is the world's largest submarine oil line, and when was it completed?
4. What is unitization, or the unit plan of oil field development?
5. Which state was the largest producing state in the United States during 1929? Which in 1928?
6. What was responsible for California's excess in 1929?
7. Where has geophysics made possible the development of numerous new oil fields?
8. What is the acreage of producing and proven oil lands in the United States?
9. What are the evils of too close spacing of oil wells?
10. What affect has shutting in of well on future production?

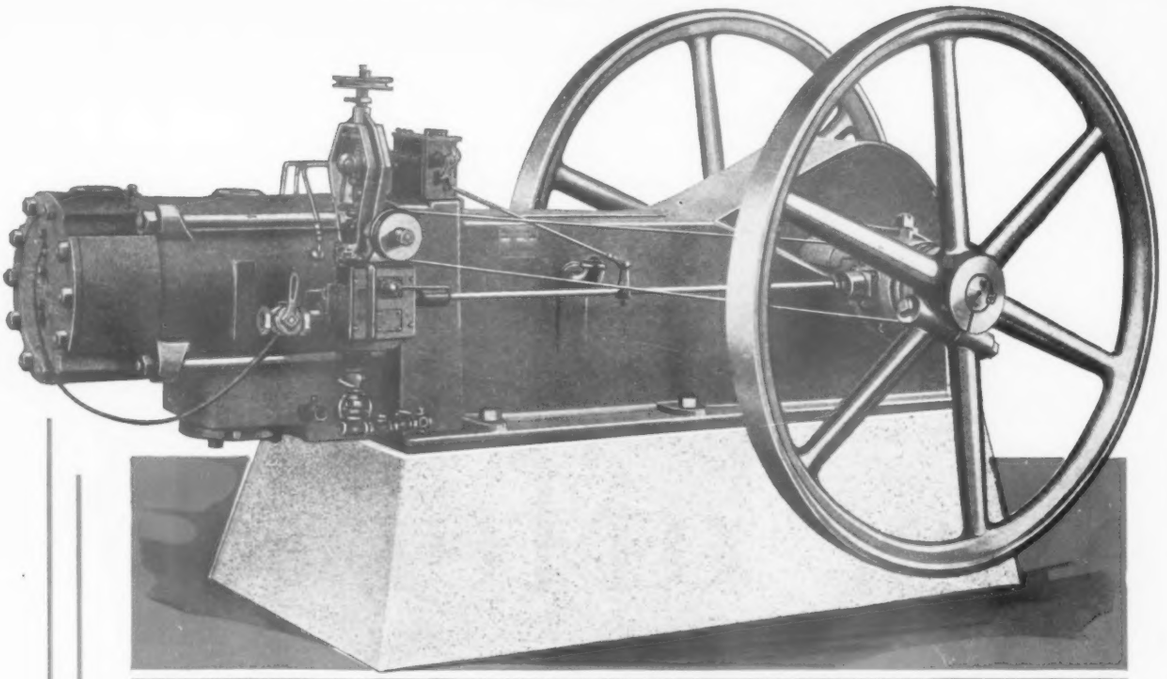
For answers to these questions turn to page 146.

Bakersfield, California.—H. A. Bardeen has drilled through a 20-foot streak of oil sand in Ramsey 1, Section 10-10-23, a wildcat test in the San Emidio district, but deeper drilling disclosed a shale condition only. The discovery is important, however, as this is one of several structures in the immediate area.

NON-PRODUCTIVE TESTS AT REFUGIO

(Listed in Chronological order of completion)

Company and Well	Date completed	Total depth
Pratt-Hewitt Oil Company—F. B. Rooke 1 (Blowout)	8-15-21	2235
Texas Gulf Oil & Gas Ass'n.—O. Mitchell 1	10- -21	2840
Pratt-Hewitt Oil Company—F. B. Rooke 3 (Blowout)	8- -21	2413
Pratt-Hewitt Oil Company—F. B. Rooke 3 (2nd blowout)	4- -24	4601
Pratt-Hewitt Oil Company—W. J. J. Heard 1	5- -24	3737
Pratt-Hewitt Oil Company—F. B. Rooke 5	8-30-24	3400
Refugio Oil & Gas Company—J. A. Lambert 1 (crater)	6- 5-25	1890
Smith-Pratt—A. W. J. Heard 1 (crater)	6-13-25	2391
Refugio Oil & Gas Company—J. Mitchell 1	8- 1-25	3050
Pratt-Hewitt Oil Company—W. J. J. Heard 2	8-12-25	4600
Refugio Oil & Gas Company—J. A. Lambert 2 (crater)	8-19-25	470
Refugio Oil & Gas Company—Tom Heard 1 (crater)	8-28-25	1168
Houston Oil Company—F. B. Rooke 2 (blowout)	10- 5-25	1100
Refugio Oil & Gas Company—J. A. Lambert 3 (blowout)	10-30-25	1605
Houston Oil Company—F. B. Rooke 1-A	11 -3-25	2486
Houston Gulf Gas Company—J. F. B. Heard 1	12-23-25	2532
Bartlett-Brooks—C. Heard 1	1-15-26	2796
Refugio Oil & Gas Company—T. P. Shelly, M. H. Ryals 1	1-31-26	3120
Houston Oil Company—F. B. Rooke 3 (blowout)	2- 8-26	1830
Houston Gulf Gas Company—F. V. W. Heard 3 (crater)	3- 9-26	2344
Houston Oil Company—W. L. Rea 1	3-16-26	2450
Refugio Oil & Gas Company—N. J. Ryals 1	4-30-26	2427
Refugio Oil & Gas Company—J. A. Lambert 4	7-27-26	2497
Bartlett-Brooks—A. W. J. Heard A-3 (crater)	8- 5-26	1604
Houston Gulf Gas Company—Tom Heard 2	9-22-26	2414
Houston Gulf Gas Company—J. J. O'Brien 1	11-11-26	1922
Houston Gulf Gas Company—Geo. Strauch 1	11-27-26	2900
Houston Gulf Gas Company—Holmes Heard 2	11-27-26	2665
Bartlett-Brooks—O. Mitchell 1	12- 9-26	2500
Houston Gulf Gas Company—Fox Heirs 1	12-12-26	3531
Houston Gulf Gas Company—J. Buckley 1	12-28-26	2195
Bartlett-Brooks—Clint Heard A-2	1-12-27	1860
Houston Gulf Gas Company—John O'Brien 2	2-11-27	3333
Houston Gulf Gas Company—H. G. G. Co., Fee 1	2-27-27	2685
Houston Gulf Gas Company—H. Heard 3	3- 5-27	2163
Houston Oil Company—F. B. Rooke 5	3- 5-27	....
Houston Gulf Gas Company—L. M. Rogers Heirs 2	5-24-27	2510
Houston Gulf Gas Company—N. J. Ryals 3	6-25-27	2980
W. F. Morgan—J. A. Lambert 2	7- 2-27	2900
W. F. Morgan—J. A. Lambert 7	7- 6-27	2700
Houston Oil Company—F. B. Rooke 2-A	3- 1-28	....
Houston Gulf Gas Company—O'Brien 1	10-15-28	3664
Houston Oil Company—F. B. Rooke	10-18-28	1400
Saxet Oil Company—O'Brien 1	12- 6-28	....
Houston Oil Company—W. Heard 4	12-22-28	4992
Saxet Oil Company—O. Mitchell 1	12-27-28	....
Houston Gulf Gas Company—Fox 1	2 -4-29	4636
Houston Gulf Gas Company—J. A. Lambert 7	2- 5-29	5215
Benedum-Trees Oil Company—F. B. Heard 1	1-26-30	6134
Union Exploration Company—Houston Gulf Gas—F. B. Rooke 1 (blowout)	3-15-29	2400
Magnolia Petroleum Company—C. Heard 1	4- 5-29	4200
Mission Drilling Company—Mitchell 1	4-25-29	4145
Houston Gulf Gas Company—O'Brien 4	4-30-29	4060
Union Producing Company—J. Mitchell 1	5 -4-29	4140
Houston Gulf Gas Company—Rogers Heirs 3	5-26-29	4689
Union Producing Company—Powers 1	6-22-29	4050
Houston Gulf Gas Company—F. B. Rooke 2	6-24-29	4612
Mission Drilling Company—Powers 1	6-26-29	4050
Houston Gulf Gas Company—L. Adkins 3	7-22-29	3810
Houston Gulf Gas Company—J. Buckley 1	8- 9-29	3161
Saxet Oil Company—C. Heard 5	8-21-29	3682
Pearson Properties, Inc.—Fox Heirs 3, Block 3	1-20-30	3846
Benedum-Tress Oil Company—F. B. Heard 1	1-26-30	6134
Independent Oil & Gas Company—T. P. Shelly 1	2- 6-30	5493
Morgan Oil Corporation—Hornberg 1, Block 32	2-26-30	3719
Union Producing Company—O'Brien 2	3-10-30	5588
Morgan Oil Corporation—Rooke 1, 114.5 acres	3-20-30	5930
The Texas Company—Shelton 1	3-23-30	6050
Ed Price—Mission River 1	4- 4-30	2704
Morgan Oil Corporation—Powers 1	4-15-30	6538



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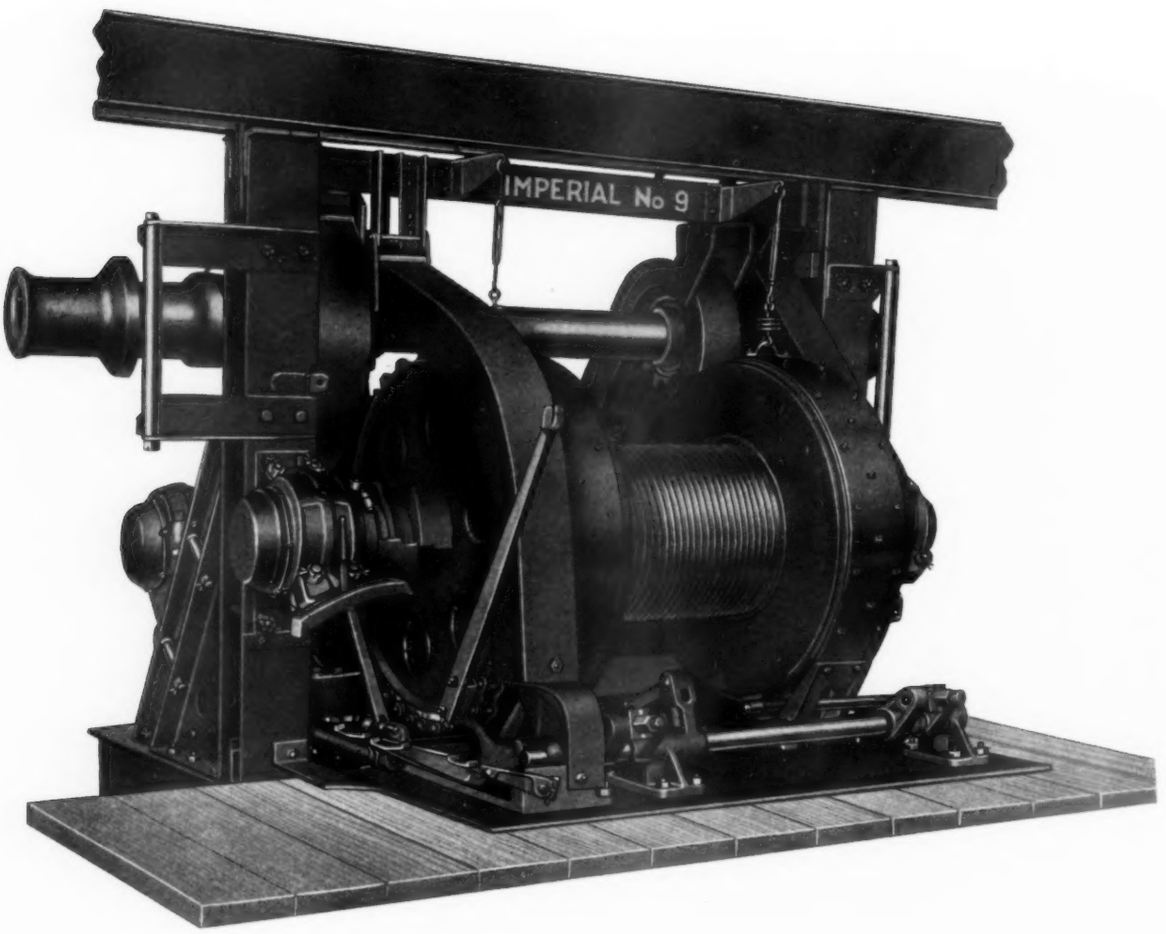

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Building Boom Follows Oil Development in South America

By ROY E. LEIGH
Special Foreign Representative

EXPANSION of the South American oil industry has brought about a building boom of such magnitude as has not been known in Caribbean communities since the building of the vast fortifications designed by the Spanish colonizers to defend Cartagena and other strongholds along the Spanish Main from their marauding enemies. The present boom is entirely peaceful and industrial in its character. Instead of massive breastworks and heavy gun emplacements, it includes pipe lines, pumping stations, storage tanks, generating plants, office buildings, bungalows, hospitals, club houses, wharves, and facilities for the production, transportation, and refining of crude oil and to promote the health, comfort, and well-being of those engaged therein, natives as well as foreigners. All of this activity is due to the oil industry, with the exception of an urbanization project at Barranquilla, Colombia, the entire success of which is creditable to American engineers.

The Shell subsidiaries, considered as a group, since they are operated on that basis, are engaged upon the most extensive program of construction, vast expenditures having been made necessary by the growth and expansion of their widespread activities. Caribbean Petroleum Corporation and Venezuelan Oil Concession operations outgrew their original camp at Los Haticos, a suburb of Maracaibo, some time ago, necessitating the establishment of a new community center called New Colony, in the suburb of Bella Vista. Further expansion of activities, including the opening of a new field at Rio Tarra, in the District of Colon, has made necessary the commencement of a third residential colony at Las Delicias, not far removed from New Colony or Bella Vista.

The Shell construction program, which has been under way for a year or more, is still far from complete. It includes a two-story office building containing more than 59,000 square feet of floor space, a hospital containing about 39,500 square feet, a school building, dormitories, a club house which in its appointments and facilities for recreation and pleasure will excel many smart country clubs in America, and apartments and bungalows to the total number of more than half a hundred, a sewage and water-supply system, and a modern wireless communications system.

The Shell office building now under construction by Martin Engineering Company will be of two-story U-shaped design, with wide flaring wings, oriented so as to derive full benefit from the trade winds. Its front or central section will be 265 feet wide by 40 feet deep, with two wings each 40 feet wide by 238 feet long. It will cost between three hundred and four hundred thousand dollars; and doubtless will be the most imposing edifice of its kind in all Venezuela.

The Caribbean Club, referred to above as already completed, includes a library, billiard room, social hall, bar, wide verandah, and an open-air theatre which is used both in the regular exhibition of movie reels and also in the production of amateur theatricals by the Caribbean Dramatic Society. The club grounds embrace an athletic field and cinder path amply large for cricket, foot-ball, basketball, and field sports, as well as tennis courts and a swimming pool. The pool, which is about 85 yards long by 50 yards wide, is filled with filtered water which is subjected to regular bacteriological tests and is changed at weekly intervals.

Water Supply

The Shell's water supply system must appear as a modern miracle to the citizens of Maracaibo, accustomed as they are to primitive means of supply such as cisterns storing rain water, windmills pumping brackish water from surface wells, and, during the dry season, meagre supplies hauled in gasoline tins on the backs of patient donkeys. A number of fresh wa-

Lago Petroleum Company's new office building, Bella Vista, a suburb of Maracaibo, Venezuela

ter wells have been drilled at Puntas Piedras, from which point a five-inch pipe line has been built to Maracaibo, a distance of about 15 kilometers. The water is lifted by means of electrically-driven deep-well pumps and is moved through the mains by electrically-operated centrifugal pumps. This system will supply water to the Los Haticos, Bella Vista, and Las Delicias colonies, and perhaps also to the Shell fleet of tankers.

Wireless Telephones

Coincident with the removal of the Shell offices from Los Haticos to Las Delicias, an entirely new communications system will be put in service. The old-style simplex wireless system now in use will be supplanted by modern broadcasting and receiving apparatus which will permit of two-way conversation as in ordinary telephone service. A new central station, including aerials and power equipment, will be erected near the new office building at Las Delicias. Sub-stations are located at the various operating bases, such as Cabimas, Lagunillas, Mene and Rio Tarra. A private exchange at Maracaibo will permit the use of desk telephones in connection with the wireless service, affording instant communication between Maracaibo headquarters and the various field offices.

The Shell is trying out a system of apartment houses, differing in design and operation from the large dormitories or staff houses heretofore associated with foreign oil operations. Six bachelors are assigned to one house containing six bed rooms, three baths, dining room, sitting room, kitchen, servants' quarters and bath, etc., under which arrangement each group operates and supplies its own mess, hiring and firing servants and planning its own menus on somewhat the same plan as that on which college fraternity houses are run.

Married couples with no more than one child are assigned to nine-room bungalows of hollow tile or wood-frame and stucco construction, each with two bed-rooms and connecting bath, sun parlor, sitting room, dining room, kitchen, store room, servants' room and ample closet space. Larger families are assigned to houses containing three bed rooms. These houses cost from $9000 to $15,000 each, and involve a total expenditure of some $575,000. They are finished with tile floors, built-in fixtures, and all modern conveniences.

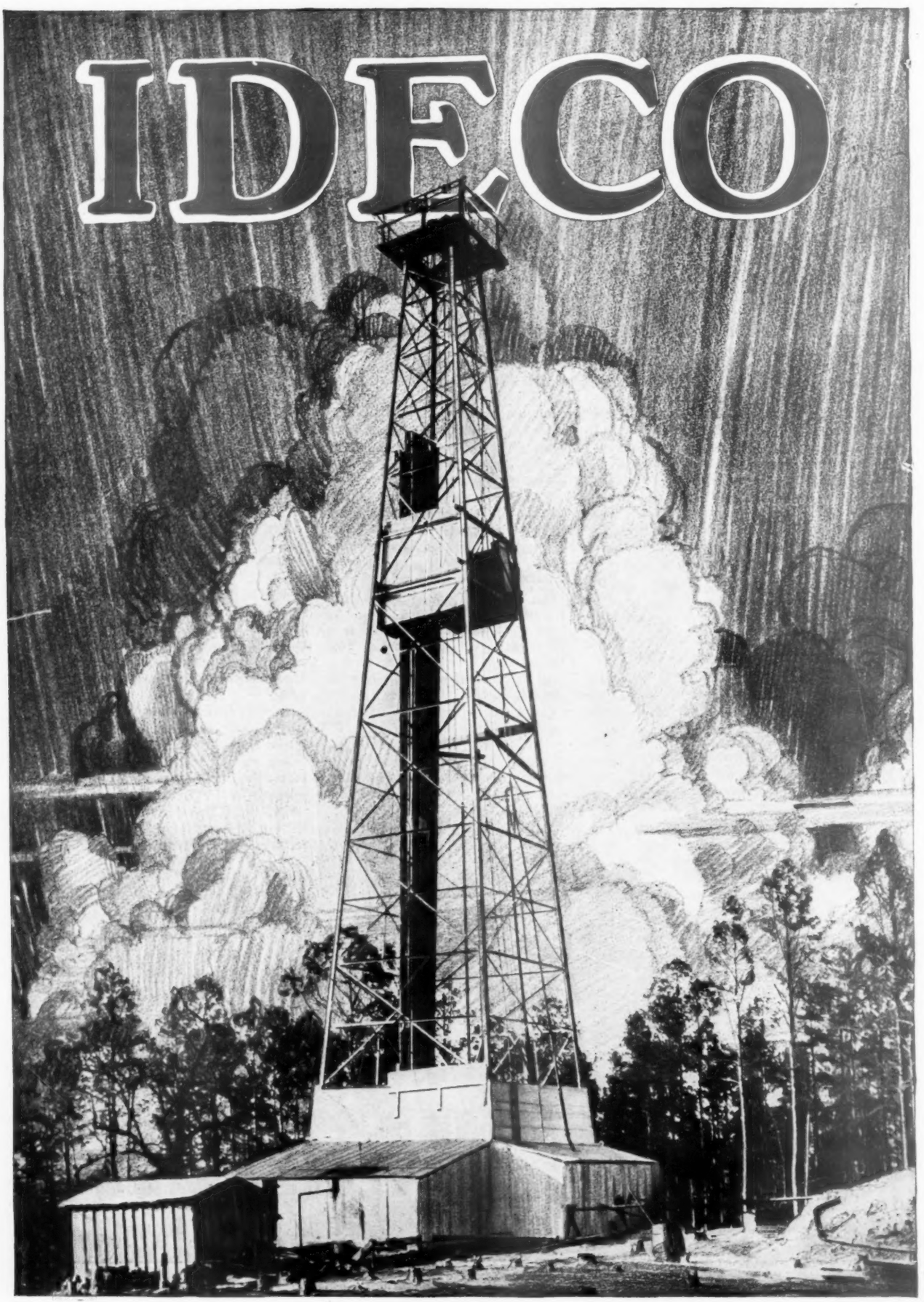
Recent construction work by Colon Development Corporation, a newly-organized Shell subsidiary which controls two proven fields and two or more prospective oil fields in the District of Colon, has included an entirely new field camp at El Cubo, with smaller groups of warehouses and bungalows at Los Manueles, Rosario, and elsewhere, 89 miles of nine-inch pipe line with necessary pumping stations, 60 kilometers of narrow-gauge railway, tank farms, wharf, terminal, cargo-loading station, and other miscellaneous and auxiliary equipment which has just been put in service, the first cargo of oil having been exported from this field during January.

Lago Petroleum Corporation (Standard Oil Company, Indiana) is also well advanced on a comprehensive program of construction, which includes a two-story office building costing $107,000, 26 bungalows costing more than $200,000 in the aggregate, several large dormitories and a mess-hall for unmarried employees, a commissary, garage, servants' quarters, club house, swimming pool, tennis courts, and other facilities necessary to a foreign community living and working almost completely independent of native surroundings.

The Lago Hospital, one of the finest institutions of its kind in South America, was completed some time ago. The office building, which is of steel frame and hollow tile construction, designed and built entirely by company engineers, constitutes another major unit of the new Bella Vista Terminal. It was completed during 1929. It contains some 17,500 square feet of floor spoce and is built in the form of a wide U with flaring sides to take full advantage of prevailing winds, which sweep steadily through its wide windows, making it one of the coolest and most comfortable structures in the whole of the Maracaibo Basin.

The layout of the Bella Vista Terminal contemplates the ultimate construction of 46 bungalows and a palatial residence for the general manager, in addition to the several other structures mentioned above. However, only 26 bungalows are now under way. Six of these are designed for small families requiring only one bedroom; but the remaining 20 are of a larger type containing two bed rooms, living room, dining room, kitchen, two screened porches, pantry, store room, master's bath, servants' room, and servants' bath. These homes, which are of hollow tile construction, will cost around $8000 each, exclusive of the ground on

Two-story apartment houses, each occupied by six men, Shell Companies' terminal, Bella Vista, a suburb of Maracaibo, Venezuela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which they stand; and will compare very favorably in construction, appearance, and comfort with the average home of similar dimensions in the newer residential districts of American cities.

Field Construction

Lago Petroleum Corporation's program of field construction completed during 1929 included 51 80,000-barrel steel tanks, 37 kilometers of narrow-gauge railway, and 37 kilometers of 10-inch gathering line. The storage tanks, railway, and pipe line are built along the eastern shore of Maracaibo Lake; and serve to unify and co-ordinate the company's drilling, production, and shipping operations at La Rosa, Ambrosio, Lagunillas, and throughout the Bolivar district. The railway, which is of 30-inch gauge and built of 40-pound steel, is equipped with 10-ton gasoline driven locomotives of American manufacture. Since its completion, it is possible to unload and transfer materials and supplies, regardless of their ultimate destination, either at Las Salinas or Lagunillas, and to shift them to any part of the field or to warehouse depots in the northern or southern areas. Likewise, since the completion of storage and pipe line facilities, congestion and confusion need no longer occur in the loading of tankers. La Rosa oil may be loaded aboard ship at Lagunillas, or vice versa, if need be; and pipe line and shipping operations are greatly facilitated.

Creole Petroleum Corporation (Standard Oil Company of New Jersey) is opening up a new oil field at Quirequire, in eastern Venezuela. Contracts have been let to Martin Engineering Company and pipe and materials have been shipped for the construction of a pipe line, tank farm, dock, cargo-loading station, and highway to connect the new field with tide-water.

Tocuyo Oilfields, Ltd., is also engaged upon a construction program, including tank farm, pipe line, railway, wharf, and terminal facilities for the exploitation of its new field at Chichiriviche, about 50 miles northwest from Puerto Cabello.

Venezuela Gulf Oil Company is farther advanced than the other companies with its construction program, its large two-story office building, hospital, shops, warehouses, and bungalow-colony at Bella Vista having been completed some time ago. The company is now building a 5000-kw electric generating plant in the lake-shore area, with power lines serving its entire operations along the famous Kilometer Strip. This marks an important milestone in the progress of operations at Maracaibo, indicating as it does the company's choice of pumping power and suggesting that operations there may shortly enter upon a new phase distinct from that of hurried offset drilling, when little or no attention was paid to non-flowing wells.

West India Oil Company, South American distributing organization for Standard Oil Company of New Jersey, has recently completed a small topping plant at Maracaibo, and, also, of a duplicate at Brighton, Trinidad. Of far greater importanee, however, was the completion during 1929 of Pan-American Petroleum & Transport Company's 100,000- to 120,-000-barrel refining and cracking plants on the Island of Aruba, D. W. I.

Plans are also being carried into execution for the lighting of the Maracaibo Bar, so as to permit the entrance and exit of tankers into and out of Maracaibo Lake during the hours of darkness. At present, ships may cross the bar only during high tides occurring in day-light hours, which causes each tanker plying back and fourth between lake ports and Paraguana, Curacao, and Aruba to lose approximately eight hours out of each 24. If this scheme is successful, it might increase the capacity of the tanker fleets by a maximum of 33 1/3 per cent, although veteran navigators have expressed a doubt regarding the safety of attempting to negotiate this narrow channel during darkness.

Construction in Colombia

Andian National Corporation, of Colombia, has also done a great deal of construction work during recent months, including the looping of its 10-inch pipe line from El Centro to Cartagena. A seven-story office building and a number of modern bungalows were recently constructed at Cartagena; and a modern and commodious hospital was also built at Bella Vista, across the bay from Cartagena. The Andian office building, which is approximately 110 x 65 feet in over-all dimensions, is situated on the Plaza de Rafael Nunez and represents the most modern edifice in that ancient city.

Tropical Oil Company is constantly expanding its residential and industrial center at El Centro, in the interior of Colombia. Facilities already completed include field offices, cottages for family men, native and foreign, dormitories and mess-halls for unmarried employees, native and foreign, standard gauge steam railway from Barranca Bermeja to El Centro, more than 200 kilometers of improved roads, commissary for the sale of dry goods, groceries, vegetables, fresh eats, etc., abatoir for the slaughtering of animals under sanitary conditions, warehouses and pipe yards, extensive water supply system, filtration plant, ice and cold storage plants, dehydration plant, electric generating plant, gasoline extraction plants, foundry, machine shops, boiler shop, welding shop, pipe shop, planing mill and furniture factory, saw mill, brick yard, garage for repairing automobiles, trucks, and tractors, hospitals for natives and foreigners, dispensary, telephone system, and other facilities. A luxurious club building, including dance hall, theatre, library, reading room, and billiard room was completed in 1929, it representing a feature of one of the most comprehensive programs ever nudertaken by an oil company to provide facilities for the recreation and pleasure of its employees.

Tropical Oil Company is now engaged upon the construction of 80 kilometers of national highway for the Colombian government, the route leading from Barranca Bermeja, a point on the Magdalena River, through the de Mares Concession to San Vicente, in the direction of Bucaramanga. The road will be 20 feet wide and will be surfaced with from four to six inches of crushed rock, with a finishing coating of asphalt or road oil.

Andian Hospital

Reduce Shutdown Costs
by using the
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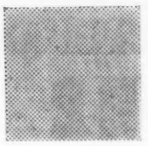

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You are certain to be interested in it because you are always on the alert for methods of reducing the most frequent causes of shutdowns. Efficient oil men make enviable records for themselves by keeping drilling costs down and at the same time maintaining that high factor of safety and efficiency so desirable by the best oil executives. Your records will disclose that one of the most frequent causes of shutdowns is the blowing out of rotary hose.

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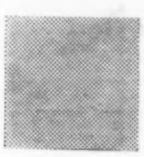
For less grief and more drilling time use the "Defiance" Rotary Hose



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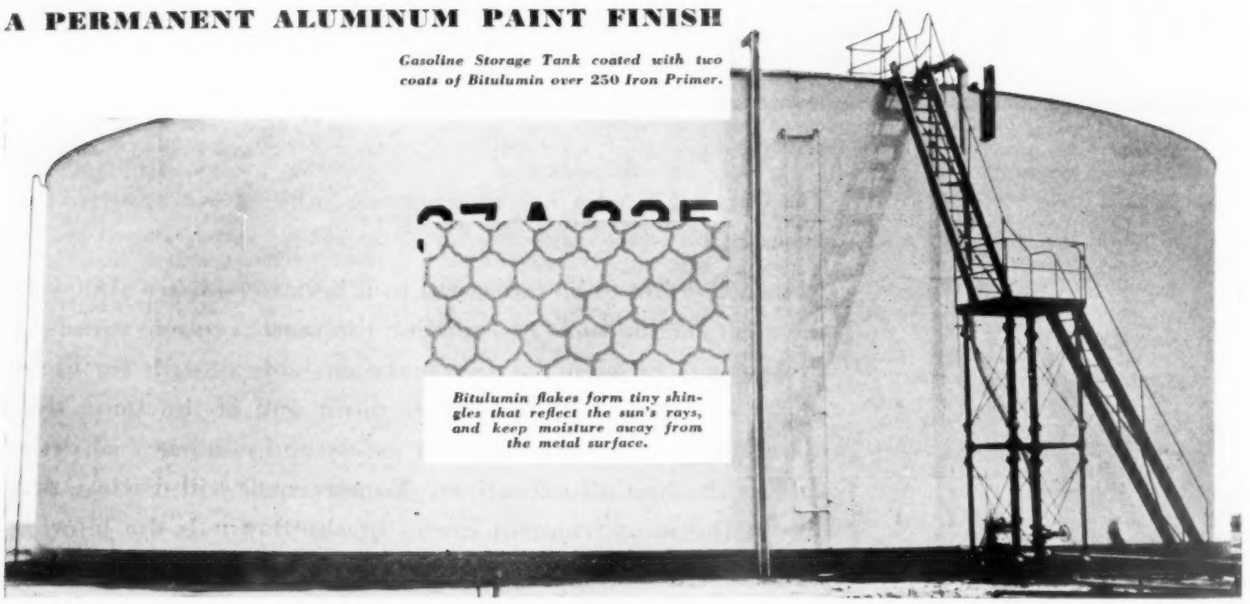

Bitulumin flakes form tiny shingles that reflect the sun's rays, and keep moisture away from the metal surface.

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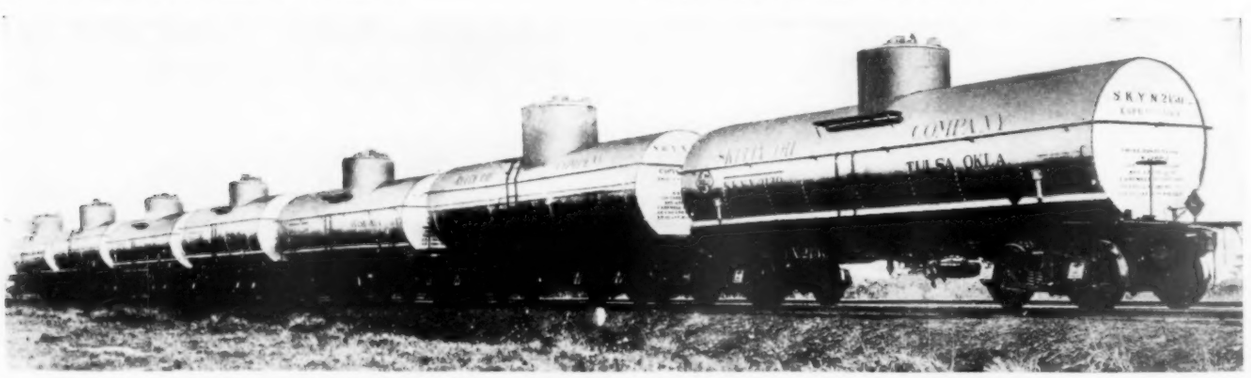


Oil Tank Cars, Skelly Oil Co., coated with one coat of Bitulumin over 250 Iron Primer

Markets--Production--Crude Prices

H. J. STRUTH, *Staff Economist, Houston, Texas*

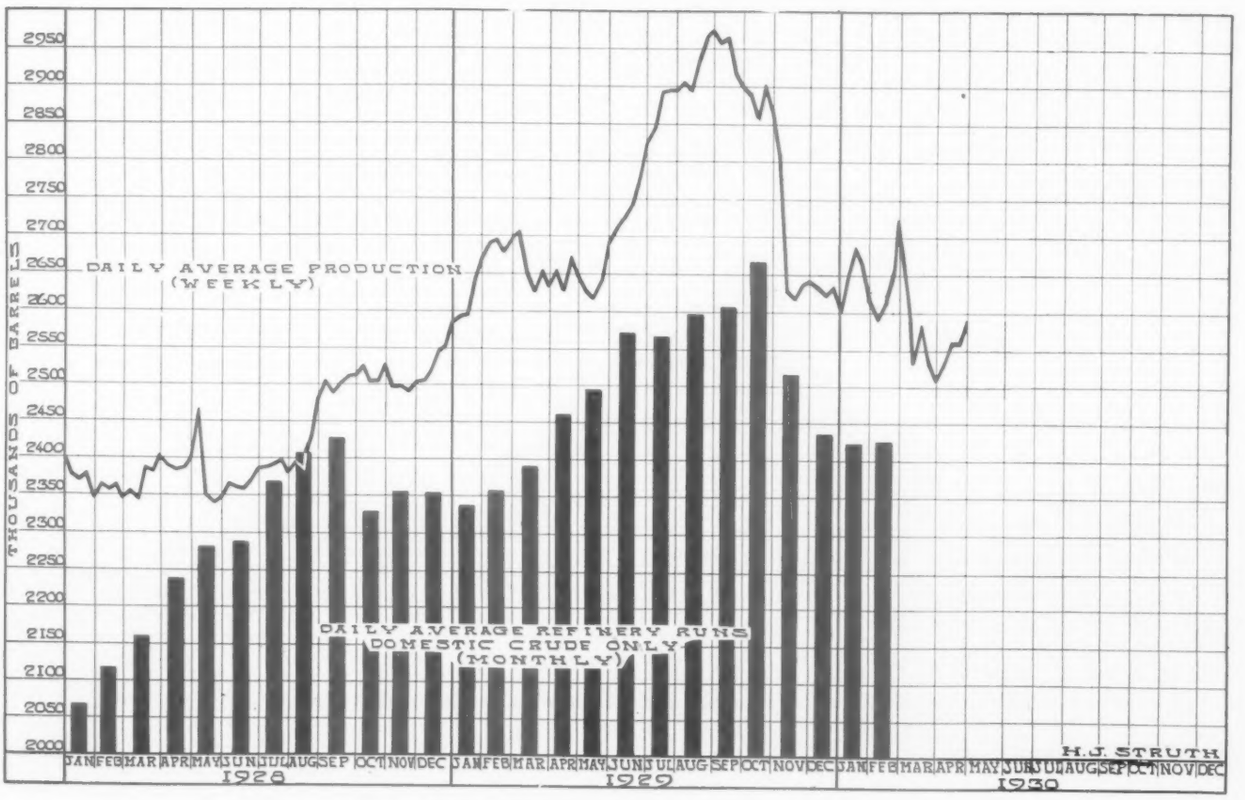
Cheap Crude Boosting Demand and Production in Texas

THE ease with which Texas operators are able to make crude connections is creating a rather dangerous situation throughout the state. Last week, production in Texas, outside of the Gulf Coast area, increased 18,300 barrels, constituting the major portion of a total gain recorded for the United States of 29,200 barrels. Even though production in Texas has been excessive since the first of the year, it appears that buyers are actively negotiating for additional supplies at present prices. It is not difficult to see that a substantial part of this buying has resulted from the relatively cheap status of the Texas crude market.

Figures of supply and demand in Texas, presented in a special item appearing in this section of the current issue show that there is an apparent balance at the present time. According to these figures, Texas is able to dispose of a daily production of 830,000 barrels. However, if we weigh the situation by including the actual results of the first quarter of this year, it becomes apparent that the maximum output required during the current quarter should not exceed 729,567 barrels a day. On the basis of this latest data, which is believed to be authentic, the quota for Texas has been revised to the new figure. This indicates an excess during the week ending April 26 of 105,883 barrels. Although the demand for Texas crude has been considerably above anticipated requirements since the first of the year, a check of gasoline supply and demand shows that refineries in Texas, alone, consumed about 3,400,000 barrels in excess of normal requirements during the first three months of the year.

Besides, stocks of crude in this state

DOMESTIC PRODUCTION AND REFINERY RUNS



HOW LAST WEEK'S DAILY AVERAGE PRODUCTION COMPARES WITH NECESSARY AND NORMAL QUOTA LIMIT

	Necessary Daily Average 2nd Quarter 1930	Quota Limit Prescribed to Correct Previous Excesses	Actual Daily Average Week Ending April 26, 1930	Excess
Arkansas	69,879	69,879	57,900	—11,979
California	669,791	602,565	630,800	28,334
Kansas	116,044	111,552	125,900	14,348
Louisiana	58,011	50,503	62,850	12,347
Oklahoma	684,274	681,493	662,050	—19,443
Texas	771,384	729,567*	835,450	105,883
Balance of U. S.	235,945	235,945	215,150	—20,795
Total	2,605,328	2,481,505	2,590,100	108,595

*Corrected—actual demand 1st Quarter higher than indicated by previous estimate.

increased 363,563 barrels during the same period. As a result, production of crude was excessive to the extent of 41,817 barrels a day throughout the first quarter of this year.

Curtailment Need Ignored

It is perhaps this wave of buying in Texas that is causing operators to ignore the need for curtailment. At the same time, however, there is heard on every side the argument that crude prices are still too low. In the meanwhile, production continues to mount to higher levels in various major fields of the state, with the result that buyers are having little or no difficulty establishing attractive connections. From an economic standpoint, this situation cannot be regarded as satisfactory and certainly offers no immediate incentive to buyers to pay more for their oil. It is also a well known fact that refining operations in the state are being conducted at an excessive rate, simply because of the availability of cheap crude. How long this condition can continue is not difficult to comprehend, but it is certain that refinery operations will not be curtailed as long as crude can be obtained so cheaply. The only course open to the industry in Texas lies, therefore in the adoption of state-wide curtailment measures.

Operators in California have apparently realized the necessity for drastic curtailment to prevent excessive utilization of cheap crude. In their case, the gasoline market plays a most important part in the crude situation, and it is only by making crude scarce that a fair state of equilibrium can be maintained. The suggestion that the state production allowance be reduced to 550,000 barrels daily in the face of current requirements of about 670,000 barrels and a quota limit of 602,000 barrels, clearly shows the extent to which the industry there will go in order to rectify an uncertain underlying situation. It is believed, however, that the drastic steps contemplated will not be necessary, since current supply in California is already below actual requirements. If the state will endeavor to reduce total production another 28,000 barrels daily, the situation will undoubtedly show an absolute balance.

Announcement Important

Announcement this week by Standard Oil Company of California that it will purchase gasoline for export, delivered at ship's rail, San Pedro, California, at 6½ cents per gallon was one of the most important developments of the year and is expected to be a stabilizing factor in both the gasoline and crude oil markets. This was the first official posting of gasoline prices ever made and is an innovation which may be followed by leading purchasing companies in other districts. The offer specifies a 30-day period and is subject to change without notice. It applies specifically to U. S. motor gasoline but states that prices for other grades will be quoted upon application. Large quantities of gasoline have left Los Angeles harbor at six cents per gallon, and even less, with

Texas Crude Demand Equals Current Supply

Houston.—A recent survey of the crude situation in Texas, covering the production and disposition of crude by a majority of the major companies in this state, reveals that the demand is equal to the current supply.

Here is the way the supply and demand situation appears at this time:

Supply

(Daily Average)

	Barrels
Production	830,000
Receipts from Oklahoma and Kansas	250,000
Receipts from Louisiana and Arkansas	25,000
Total Current Supply	1,105,000

Demand

	Barrels
Tank Car and Pipe Line Shipments—	
From North Texas	26,000
From Panhandle	29,000
From West Texas	58,000
From Van Zandt	5,000
Coastwise Shipments	335,000
Exports	20,000
Consumed by Refineries	632,000
Total Current Demand	1,105,000

The survey also shows that stocks of crude in Texas have increased to the extent of about 364,000 barrels since January 1. It has been estimated that the total quantity of crude in storage in Texas, as of March 31, amounted to 112,433,390 barrels. Stocks of gasoline at Texas refineries show an increase since January 1, of about 1,480,000 barrels, which represents a crude equivalent of about 3,400,000 barrels.

CRUDE RUNS TO STILLS, GASOLINE AND GAS AND FUEL OIL STOCKS, WEEK ENDING APRIL 19, 1930

(Figures in barrels of 42 gallons)

District—	Potential Daily Capacity	Potential Capacity Reporting Total	Potential Capacity Reporting Per Cent	Crude Runs to Stills Total	Crude Runs to Stills Daily Average	Crude Runs to Stills Per Cent Operated	Gasoline Stocks	Gas & Fuel Oil Stocks
East Coast	605,700	605,700	100.0	3,170,100	452,900	74.8	9,284,000	6,632,000
Appalachian	128,100	116,600	91.0	614,700	87,800	75.3	1,885,000	775,000
Indiana, Illinois, Kentucky	378,000	376,000	99.5	2,309,900	330,000	87.8	8,769,000	3,338,000
Oklahoma, Kansas, Missouri	462,200	411,700	89.1	2,294,500	327,800	79.6	4,401,000	3,731,000
Texas	788,000	712,700	90.4	3,949,000	564,100	79.2	7,819,000	10,279,000
Louisiana-Arkansas	270,600	262,000	96.8	1,177,300	168,200	64.2	2,726,000	2,052,000
Rocky Mountain	148,900	139,300	93.6	415,100	59,300	42.6	2,863,000	1,051,000
California	897,400	891,400	99.3	3,935,200	652,200	63.1	15,730,000	108,179,000
Total Week April 19	3,678,900	3,515,400	95.6	17,865,800	2,552,300	72.6	53,477,000	136,037,000
Total Week April 12	3,678,900	3,510,400	95.4	17,790,800	2,541,500	72.4	53,908,000	135,845,000
The Texas and Louisiana Gulf Coastal Figures Shown Below are Included Above in the Totals of their Respective Districts								
Texas Gulf Coast	526,500	523,500	99.4	2,957,600	422,500	80.7	6,792,000	7,675,000
Louisiana Gulf Coast	147,500	147,500	100.0	730,900	104,400	70.8	2,361,000	1,184,000

FIELD STATISTICS OF IMPORTANT DISTRICTS

Pool—	Oil Wells Completed	Total Initial Production	Initial Per Well	Number Producing Wells	Daily Production Barrels	Daily Prod. Per Well	Rigs Up	Wells Drilling
WEST TEXAS:								
Ector County	17	15,260	898	16	9,355	585[2]	11	24
Hendrick	621	3,117,155	5,028	564	79,535	141[2]	.	2
Church & Fields	217	215,920	994	210	20,535	98	1	1
Gulf-McElroy	86	62,365	725	84	14,100	168	.	2
Yates	382	2,514,855	6,614	370	113,860	308[2]	4	10
TEXAS PANHANDLE:								
Gray County	581	425,100	729	556	63,170	114	20	62
OKLAHOMA:								
Oklahoma	150	1,421,040	9,122	37	97,287	2,629	35	182
CALIFORNIA:								
Santa Fe Springs[1]	611	1,643,450	2,689	291	118,000	408	7	76

[1]Includes deep zone production only. For field total add 90 wells and 11,300 barrels.
[2]Production partially pinched.

the net-back not more than meeting cost of manufacture. The new policy will stabilize the export market and insure refiners at least the cost of manufacture for their products.

The move to reduce state production to 550,000 barrels is gaining momentum, but as the output has not yet been brought down to the specified total of 603,000 barrels, there is considerable doubt concerning the wisdom of a campaign to force a still lower allowable. Production has crept upward during the past two weeks and curtailment leaders are worried for fear that a still higher output will be recorded. A belief that if 550,000 barrels is set as the goal, a figure of at least 600,000 barrels can be reached.

It has developed that a production of 610,000 barrels will not allow for an appreciable withdrawal from storage of about 185,000,000 barrels. When this allowable was first calculated, consumption was expected to be enough above the figure to cause sharp withdrawals during the peak of demand and only small additions to stocks during the dullest periods. There is some agitation to bring production down to force inroads into heavy stocks, but opposition has developed in some quarters because the original objectives of 610,000 and 603,000 barrels have not been reached.

Santa Fe Springs is in a mild state of disorder, with the state unable to exercise police powers. Production is running about 134,000 barrels, as against an absolute potential of around 180,000 barrels. Larger companies are holding to their original curtailment schedules, despite the tendency of two large independents to produce their leases at maximum rates.

Gasoline War Ended

The gasoline war that has raged in Southern California for two months has at least been temporarily ended, with gasoline in the Los Angeles territory retailing at 19½ cents, up from four to six cents. Major marketers are retailing their products at the new price, but a few independents have not yet met the raise.

While production in Oklahoma and Kansas continues to hover around present levels, indications point to definite improvement. Last week's figures show that the combined production of the two states is about 5000 barrels a day below the

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

(Barrels of 42 gallons)

	Week Ended April 19	Week Ended April 12
At Atlantic Coast Ports—		
Baltimore	145,000	195,000
Boston	65,000	.....
New York	1,012,000	648,000
Philadelphia	342,000	159,000
Others	186,000	225,000
Total	1,750,000	1,227,000
Daily Average	250,000	175,286
At Gulf Coast Ports—		
Galveston District	.....	.....
New Orleans and Baton Rouge	15,000	92,000
Port Arthur and Sabine District	.....	"A" 73,000
Tampa	26,000	9,000
Total	41,000	174,000
Daily Average	5,857	24,857
At All United States Ports—		
Total	1,791,000	1,401,000
Daily Average	255,857	200,143
Daily Average Four Weeks Ended	261,536	246,357
Distribution of Total Imports is as Follows:		
Crude	1,157,000	978,000
Gasoline	179,000	177,000
Gas Oil	44,000	"A" 73,000
Fuel Oil	385,000	164,000
Kerosene	26,000	9,000
Total	1,791,000	1,401,000

"A"—Revised.

CALIFORNIA OIL RECEIPTS AT ATLANTIC AND GULF COAST PORTS

(Barrels of 42 gallons)

	Week Ended April 19	Week Ended April 12
At Atlantic Coast Ports—		
Baltimore	.....	78,000
Boston	.....	.....
New York	.....	78,000
Philadelphia	98,000	58,000
Others	97,000	40,000
Total	195,000	254,000
Daily Average	27,857	36,286
At Gulf Coast Ports—		
Total	.....	.....
Daily Average	.....	.....
At Atlantic and Gulf Coast Ports—		
Total	195,000	254,000
Daily Average	27,857	36,286
Daily Average Four Weeks Ended	45,214	56,500
Distribution of Total California Oil Receipts is as Follows:		
Gasoline	195,000	176,000
Gas Oil	.....	78,000
Total	195,000	254,000

Weekly Comparisons of Permits Granted for New Wells

State—	Week ending April 26	Previous week	This week 1929	Total this month	This month 1929	Total this year	Total this date last year	1929 year Total
Arkansas	3	1	...	8	14	37	46	159
California	17	11	27	57	110	241	477	1,231
Louisiana	31	12	27	90	77	353	265	903
Kansas	21	23	...	92	53	320	283	1,079
Oklahoma	63	77	86	304	226	987	977	3,578
Texas	98	165	169	526	685	2,486	2,612	8,697
Total	233	289	309	1,077	1,065	4,424	4,660	15,647

prescribed quota, while actual current requirements are causing a draft on storage.

Developments of the past week have brought Mid-Continent crude oil into a more favorable position. The chief advantages gained are increased pipe line capacity from the Mid-Continent into the middle west.

Eight booster stations are to be added to the Texas-Empire Pipe Line from Oklahoma to the Chicago refining center. These will be placed between the 11 pump stations now serving the line. The additional units will increase the capacity of the carrier, which delivers crude over a wide area and to several refining plants not controlled by either the Texas-Empire Pipe Line Company or the Cities Service Oil Company, which are owners of the line.

The other development is still not in the official class. Surveys being made by Ford, Bacon and Davis, Inc., of New York are an assurance that a new carrier is under contemplation out of the Mid-Continent. Work being done in Missouri would indicate that the line is to serve the St. Louis area and it may extend farther north and east.

Ajax Pipe Line Company is the name attached to the project. The line is supposed to be 10-inch, which would give it daily capacity of 40,000 barrels. In some quarters the line is credited to Standard Oil Company (New Jersey) circles, although this is not confirmed. The latter company now has no carrier northward out of the Mid-Continent. Its subsidiary, Oklahoma Pipe Line Company, extends southward out of Oklahoma and connects with the pipe line facilities of Standard Oil Company (Louisiana).

Oklahoma City oil producers are seeking increased pipe line tonnage out of that pool. The carrier companies are being petitioned to increase the runs to 20 per cent of the potential output of the field. Under existing proration orders, the field is allowed 25 per cent of its potential but pipe line facilities have never been adequate to allow that per cent in runs.

Seminole continues to drop slightly lower in output than pipe line runs from that area, forcing slight reductions in storage.

According to figures compiled by the American Petroleum Institute, refineries in the United States, during the week ending April 26, ran 18,897,300 barrels of crude. This represents a further gain of nearly a million barrels over the preceding week. At the rate gains are being recorded in refinery runs, it begins to look as though all effort to control the gasoline situation this year has been thrown to the winds. While gasoline stocks have shown a decline, it is apparent that the gain in production will prevent the degree of improvement that would otherwise have been effected by the unusual rate of demand. Gasoline stocks on April 26 aggregated 53,212,000 barrels, a decline since April 19 of 265,000 barrels.

Following are the important changes in production reported by the American Petroleum Institute for the week ending April 26:

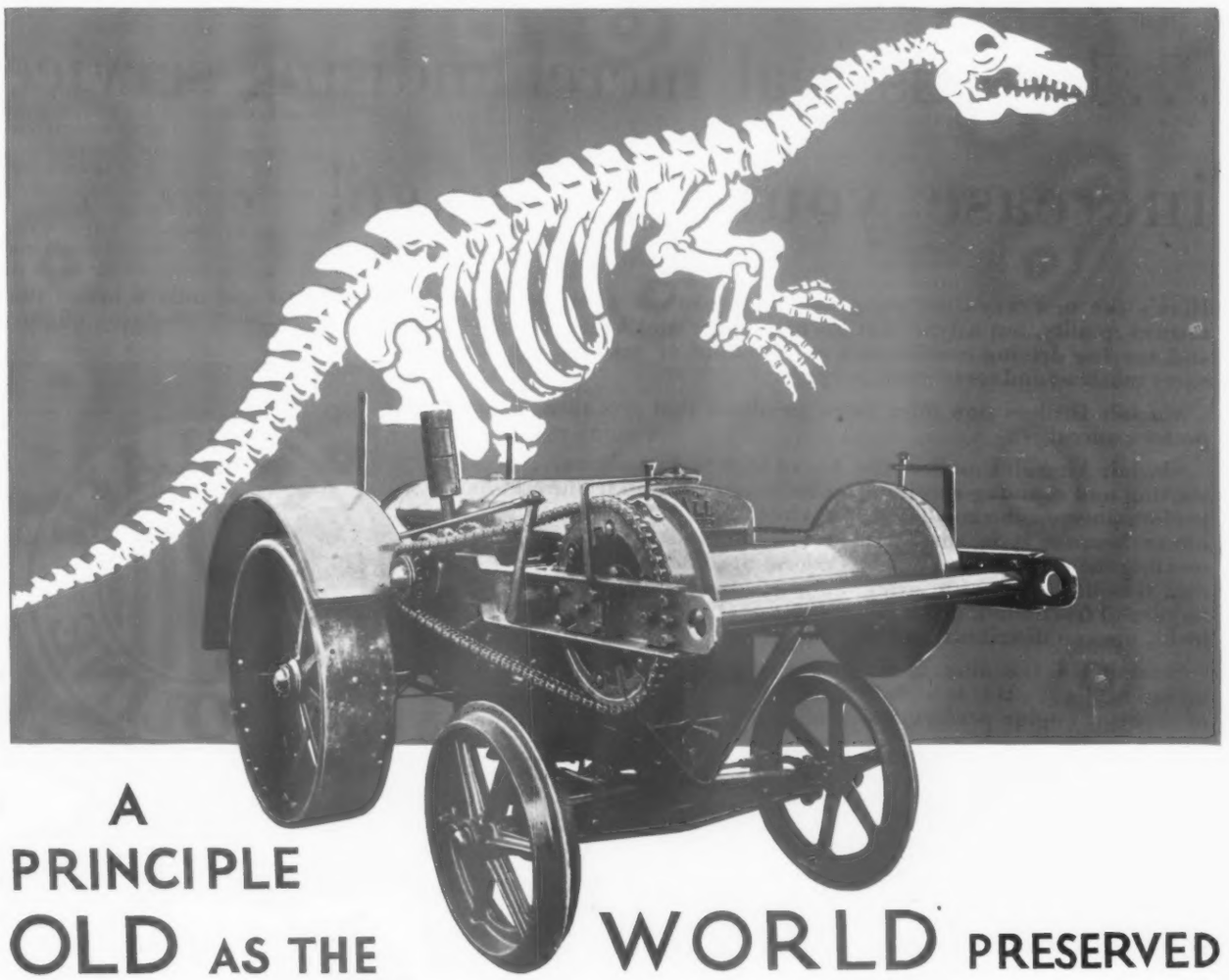
		Barrels
Gray County	Increase	2,200
Young County	Increase	7,350
Ector County	Increase	1,700
Yates	Increase	2,600
Van Zandt	Increase	1,600
Darst Creek	Increase	2,000
Barbers Hill	Decrease	4,100
Refugio	Decrease	1,100
Little River	Decrease	3,100
East Little River	Decrease	2,100
Earlsboro	Increase	1,050
East Earlsboro	Increase	2,000
St. Louis	Decrease	1,350
Oklahoma City	Increase	5,050
Sasakwa	Increase	3,100
Konowa	Increase	1,650
Ventura Avenue	Increase	2,200
Voshel	Increase	6,900
Salt Creek	Decrease	1,150
Eastern States	Increase	1,200

(Continued on page 95)

Summarized Review of Field Results

State—	Completions This week	Completions Last week	Oil Wells This week	Oil Wells Last Week	Gas Wells This week	Gas Wells Last week	Failures This week	Failures Last week	Initial Prod. This week	Initial Prod. Last week
Arkansas	5	5	4	2	..	..	1	3	446	60
California	18	16	14	15	..	..	4	1	9,435	12,985
Illinois	..	2	..	..	..	..	..	2	..	..
Indiana	..	9	..	5	..	..	..	4	..	393
Kansas	13	18	5	6	..	..	8	12	605	1,065
Kentucky	13	19	8	10	4	..	1	9	408	160
Louisiana	25	24	6	12	3	3	16	9	3,067	1,467
Michigan	8	8	4	4	1	..	3	4	690	394
Mississippi	1	..	..	..	..	..	1	..	..	..
New Mexico	..	..	..	..	..	..	..	..	..	..
New York	..	6	..	6	..	..	..	..	..	20
Ohio	32	52	13	27	8	16	11	9	622	298
Oklahoma	43	79	25	44	5	8	13	27	67,706	74,368
Pennsylvania	43	59	18	49	27	7	4	3	151	171
Texas	138	131	74	59	4	6	60	66	37,414	51,529
West Virginia	34	26	11	8	19	11	4	7	139	90
Total	373	454	182	247	65	51	126	156	120,683	143,000
Increase this week	..	..	..	..	14	..	..	..	..	..
Decrease this week	81	..	65	..	..	..	30	..	22,317	..

WEIGHT WHERE THE SUPPORT IS



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Nature fashioned her living structures long before there was any thought of engineering or any brain to think it. The principles laid down, however, endured for the human mind to grasp and to-day they form the basis of all correct construction.

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SINCLAIR REFINING COMPANY, INC., 45 Nassau Street, New York—*Atlanta, Chicago, Houston, Kansas City*

CRUDE OIL PRICE QUOTATIONS

(Revised to April 29, 1930)

EASTERN STATES
(Effective Feb. 17, 1930)

Penna Grade Oil in New York Transit Lines (New York)	$2.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penn Grade Oil in National Transit Lines (Pennsylvania)	2.80
Penn Grade Oil in Southwest Pennsylvania Lines (Penna.)	2.75
Penn Grade Oil in Eureka Pipe Line Lines (West Virginia)	2.65
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.45
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Lines	1.55
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines	1.65
Somerset Oil in Cumberland Pipe Line lines (Kentucky)	1.37
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (Effective Jan. 29, 1929)	.60
Wayne Dist. Oil in Cumberland Pipe Lines	1.24

CENTRAL STATES
(Effective April 11, 1930)
Posted by Ohio Oil Co.

Illinois	$1.65
Indiana	1.47
Lima	1.70
Plymouth	1.23
Princeton	1.65
Wooster	1.80

WESTERN KENTUCKY

All grades	1.55

OKLAHOMA-KANSAS
(Effective April 10, 1930)

Below 25 gravity	$ .70
25 to 25.9 gravity	.70
26 to 26.9 gravity	.76
27 to 27.9 gravity	.82
28 to 28.9 gravity	.88
29 to 29.9 gravity	.95
30 to 30.9 gravity	1.02
31 to 31.9 gravity	1.10
32 to 32.9 gravity	1.15
33 to 33.9 gravity	1.185
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.255
36 to 36.9 gravity	1.29
37 to 37.9 gravity	1.325
38 to 38.9 gravity	1.36
39 to 39.9 gravity	1.395
40 to 40.9 gravity	1.43
41 to 41.9 gravity	1.465
42 to 42.9 gravity	1.50
43 to 43.9 gravity	1.535
44 and above	1.57

PANHANDLE
(Effective April 10, 1930)

GRAY COUNTY

Below 29 gravity	.755
29 to 29.9 gravity	.805
30 to 30.9 gravity	.855
31 to 31.9 gravity	.905
32 to 32.9 gravity	.955
33 to 33.9 gravity	1.005
34 to 34.9 gravity	1.055
35 to 35.9 gravity	1.09
36 to 36.9 gravity	1.125
37 to 37.9 gravity	1.16
38 to 38.9 gravity	1.195
39 to 39.9 gravity	1.23
40 to 40.9 gravity	1.265
41 to 41.9 gravity	1.30
42 to 42.9 gravity	1.335
43 to 43.9 gravity	1.37
44 and above	1.405

CARSON-HUTCHINSON COUNTIES

Below 32 gravity	$ .775
32 to 32.9 gravity	.825
33 to 33.9 gravity	.875
34 to 34.9 gravity	.925
35 to 35.9 gravity	.96
36 to 36.9 gravity	.995
37 to 37.9 gravity	1.03
38 to 38.9 gravity	1.065
39 to 39.9 gravity	1.10
40 to 40.9 gravity	1.135
41 to 41.9 gravity	1.17
42 to 42.9 gravity	1.205
43 to 43.9 gravity	1.24
44 and above	1.275

WHEELER COUNTY

Below 30 gravity	$ .755
30 to 30.9 gravity	.805
31 to 31.9 gravity	.855
32 to 32.9 gravity	.905
33 to 33.9 gravity	.955
34 to 34.9 gravity	1.005
35 to 35.9 gravity	.104
36 to 36.9 gravity	1.075
37 to 37.9 gravity	.111
38 to 38.9 gravity	1.145
39 to 39.9 gravity	.118
40 to 40.9 gravity	1.215
41 to 41.9 gravity	.125
42 to 42.9 gravity	1.285
43 to 43.9 gravity	.132
44 and above	1.355

WEST TEXAS
(Effective April 10, 1930)

Crane-Upton, Crockett, Ector, Howard, Pecos and Winkler Counties and Lea County, N. Mex.

Below 25 gravity	$ .65
25 to 25.9 gravity	.68
26 to 26.9 gravity	.71
27 to 27.9 gravity	.74
28 to 28.9 gravity	.77
29 to 29.9 gravity	.80
30 to 30.9 gravity	.83
31 to 31.9 gravity	.86
32 to 32.9 gravity	.89
33 to 33.9 gravity	.92
34 to 34.9 gravity	.95
35 to 35.9 gravity	.98
36 and above	1.01

Magnolia Petroleum Company posts in Crane, Upton and Winkler Counties. Southern Crude Oil Purchasing Company posts only in Crane, Upton and Winkler Counties.

CALIFORNIA CRUDE OIL PRICES AT THE WELL
(EFFECTIVE MARCH 11, 1930)

Following are the current prices offered by Standard Oil Company for crude oil at the wells: (Price per barrel of 42 gallons in fields indicated).

Gravity	Ventura*	Signal Hill	Alamitos Heights Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elk Hills	Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$ .70	$ .70	$ .70	$ .70	$ .70	$ .70	$ ..	$ ..	$ .70	$ .70	$ .70	$ .70	$ .70	..	$ .55	$ .55	$ .55	$ .55	$ .55	$ .55
15-15.9	.70	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.55	.55	.55	.55	.55	.55
16-16.9	.70	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.55	.55	.55	.55	.55	.55
17-17.9	.70	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.55	.55	.55	.55	.55	.55
18-18.9	.75	.76	.76	.76	.76	.76	..	..	.76	.76	.76	.71	.76	..	.55	.62	.62	.62	.62	.62
19-19.9	.80	.82	.82	.82	.82	.82	..	..	.82	.82	.82	.77	.82	..	.55	.70	.70	.70	.70	.70
20-20.9	.85	.88	.88	.88	.88	.88	..	..	.88	.88	.87	.83	.87	..	..	.78	.78	.78	.78	.78
21-21.9	.90	.94	.94	.94	.94	.94	..	..	.94	.94	.93	.90	.93	.92	..	.86	.86	.86	.86	.86
22-22.9	.97	1.00	1.00	1.00	1.00	1.00	..	..	1.00	1.00	.98	.97	.98	.95	..	.94	.94	.94	.94	.94
23-23.9	1.05	1.07	1.07	1.07	1.07	1.07	..	..	1.07	1.07	..	1.05	1.04	1.01	..	1.02	1.02	1.02	1.02	1.02
24-24.9	1.08	1.14	1.14	1.14	1.14	1.14	1.14	..	1.14	1.14	..	1.11	1.10	1.07	..	1.09	1.09	1.09	1.07	1.07
25-25.9	1.13	1.21	1.21	1.21	1.21	1.21	1.19	..	1.21	1.21	..	1.17	1.16	1.13	..	1.16	1.16	1.16	1.12	1.12
26-26.9	1.18	1.28	1.28	1.28	1.28	1.28	1.24	..	1.28	1.28	..	1.23	1.23	1.19	..	1.23	1.23	1.23	1.17	1.17
27-27.9	1.23	1.35	1.35	1.35	1.35	1.35	1.29	..	1.35	1.35	..	1.29	1.30	1.25	..	1.30	1.30	1.30	1.23	1.22
28-28.9	1.28	1.42	1.42	1.42	1.42	1.42	1.34	..	1.42	1.42	..	1.35	1.37	1.31	..	1.35	1.35	1.35	1.27	..
29-29.9	1.33	1.46	1.46	1.46	..	1.46	1.39	..	..	1.46	..	1.38	1.41	1.37	..	1.41	1.41	1.41	1.31	..
30-30.9	1.39	1.50	1.50	1.50	..	1.50	1.45	..	..	1.50	..	1.41	1.45	1.43	..	1.47	1.47	1.47	1.35	..
31-31.9	1.45	1.55	1.55	1.55	..	1.55	1.51	..	..	..	..	..	..	1.49	..	1.53	1.53	1.53	1.39	..
32-32.9	1.51	1.60	1.60	1.60	..	..	1.57	..	..	..	..	..	..	1.55	..	1.59	1.59	1.59	1.43	..
33-33.9	1.58	..	..	..	..	..	1.64	..	..	..	..	..	..	1.60	..	1.65	1.65	1.65	1.47	..
34-34.9	..	..	..	..	..	..	1.71	1.32	..	..	..	..	..	1.65	..	..	..	1.71	1.51	..
35-35.9	..	..	..	..	..	..	1.78	1.39	..	..	..	..	..	1.70	..	..	..	1.77	1.55	..
36-36.9	..	..	..	..	..	..	1.84	1.46	..	..	..	..	..	1.75	..	..	..	..	..	..
37-37.9	..	..	..	..	..	..	1.90	1.53	..	..	..	..	..	1.80	..	..	..	..	..	..
38-38.9	..	..	..	..	..	..	1.96	1.60	..	..	..	..	..	1.85	..	..	..	..	..	..
39-39.9	..	..	..	..	..	..	2.02	1.66	..	..	..	..	..	1.90	..	..	..	..	..	..
40-40.9	..	..	..	..	..	..	2.08	1.72	..											
41-41.9	..	..	..	..	..	..	2.14	1.78	..											
42-42.9	..	..	..	..	..	..	2.20	1.84	..											

KETTLEMAN HILLS—55 degrees Gravity and above $1.65 per barrel. *Union Oil Company.

General Petroleum Posts following prices 11-12.9 Gr. 50c, 14-22.9 55c at Kern Front, Fruitvale, Mt. Poso Creek and Rd. Mountain districts.

(See page 80)

CRUDE OIL PRICE QUOTATIONS (*Continued from Page 79*)

HOWARD AND GLASSCOCK COUNTY CRUDE

(Effective April 10, 1930)

Below 25 gravity	$ .65
25 to 25.9 gravity	.68
26 to 26.9 gravity	.71
27 to 27.9 gravity	.74
28 to 28.9 gravity	.76
29 to 29.9 gravity	.78
30 to 30.9 gravity	.80
31 to 31.9 gravity	.82
32 to 32.9 gravity	.84
33 to 33.9 gravity	.86
34 to 34.9 gravity	.88
35 to 35.9 gravity	.90
36 and above	.92

MARKHAM

The Texas Company

(Effective April 11, 1930)

All grades	$ .85

CORSICANA HEAVY

All grades	$ .80

SALT FLAT AND DARST CREEK

All grades	$1.15

SOUTH TEXAS

Mirando	$ .85
Luling	.85

NORTH AND CENTRAL TEXAS

(Effective April 10, 1930)

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs Crude

Below 25 gravity	$ .72
25 to 25.9 gravity	.77
26 to 26.9 gravity	.82
27 to 27.9 gravity	.87
28 to 28.9 gravity	.92
29 to 29.9 gravity	.97
30 to 30.9 gravity	1.02
31 to 31.9 gravity	1.07
32 to 32.9 gravity	1.12
33 to 33.9 gravity	1.17
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.225
36 to 36.9 gravity	1.29
37 to 37.9 gravity	1.325
38 to 38.9 gravity	1.36
39 to 39.9 gravity	1.395
40 to 40.9 gravity	1.43
41 to 41.9 gravity	1.465
42 to 42.9 gravity	1.50
43 to 43.9 gravity	1.535
44 and above	1.57

GULF COAST

(Effective April 10, 1930)

Grade "A" all companies	$1.15

Grade "B"

Below 25 gravity	$1.00
25 to 25.9 gravity	1.03
26 to 26.9 gravity	1.06
27 to 27.9 gravity	1.09
28 to 28.9 gravity	1.12
29 to 29.9 gravity	1.15
30 to 30.9 gravity	1.18
31 to 31.9 gravity	1.21
32 to 32.9 gravity	1.24
33 to 33.9 gravity	1.27
34 to 34.9 gravity	1.30
35 to 35.9 gravity	1.33
36 to 36.9 gravity	1.36
37 to 37.9 gravity	1.39
38 to 38.9 gravity	1.42
39 to 39.9 gravity	1.44
40 to 40.9 gravity	1.46
41 to 41.9 gravity	1.48
42 to 42.9 gravity	1.50
43 to 43.9 gravity	1.52
44 and above	1.54

CLASSIFICATIONS OF GULF COAST CRUDE

The Texas Company: GRADE A—Beaume gravity not over 26.0 degrees at 60 degrees Fahrenheit; sulphur not over 0.5 per cent; in distilling 500 cc. of the crude that part of the distillate cut between 65 per cent off and 85 per cent off shall have a pour test of zero or lower. GRADE B—All Gulf Coast heavy crudes which do not meet tests for Grade "A" or for Gulf Coast light.

Humble Oil & Refining Company: GRADE A—All crude conforming to the following tests: viscosity not less than 100 seconds Saybolt at 100 degrees Fahrenheit; sulphur not over .4 per cent; Beaume gravity not over 25 at 60 degrees Fahrenheit. Cold tests of distillates having a viscosity of 1000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit. GRADE B—Embraces all Coastal crude which does not meet the tests for "A" grade crude.

Gulf Pipe Line Company: GRADE A—Beaume gravity not over 24 at 60 degrees Fahrenheit; viscosity not less than 100 seconds universal Saybolt at 100 degrees Fahrenheit; and sulphur not over 0.4 per cent. The yield of 250 viscosity reduced distillate at 100 degrees Fahrenheit not less than 30 per cent, and this 30 per cent not heavier than 20 Beaume, and its pour test not above zero Fahrenheit. The reduced distillate to be secured by reducing the crude with fire and steam until the bottoms have a flash of not less than 540 degrees Fahrenheit, and not more than 560 degrees Fahrenheit open cup, and the entire distillate obtained in this way reduced to a distillate of 250 viscosity. The 10 per cent cut in the original distillate having an average viscosity of 500 seconds at 100 degrees Fahrenheit to have a pour test not higher than 5 degrees Fahrenheit. GRADE B—Embraces crude which does not meet test for "A" grade.

Sun Pipe Line Company: GRADE A—Viscosity not less than 100 seconds at 100 degrees Fahrenheit Saybolt. Sulphur not over .4 per cent. Beaume gravity not over 25 at 60 degrees Fahrenheit. Cold Test: of distillates having viscosity of 1000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit A. S. T. M. Method. GRADE B—All Coastal crudes which do not meet specifications for Grade A crude.

REFUGIO

(Effective April 10, 1930)

Below 25 gravity (Heavy)	.85

REFUGIO (Light)

Same as Gulf Coast 25 gravity and above.

PETTUS

(Effective April 10, 1930)

All grades	$1.40

BRENHAM

(Effective March 1, 1930)

All grades	.95

STATE CRUDE PRODUCTION TAXES

Oklahoma—Three per cent of gross value, less royalty interest.

Texas—Two per cent of gross value.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 per cent of gross market value.

Montana—Two per cent of gross value at well.

Wyoming and New Mexico—production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

WYOMING-MONTANA

(Effective April 11, 1930)

Wyoming

Byron	$1.33
Ferris	1.60
Elk Basin	1.55
Grass Creek	1.55
Rock Creek	1.35
Lost Soldier	1.05
Lance Creek	1.63
Mule Creek	1.20
Notches	.65
Big Muddy	1.38
Osage	1.65
Hamilton Dome	.85
Filot Butte	1.75
Torchlight-Greybull	1.65
Lander	.80
Rex Lake	1.10
South Casper Creek-Poison Spider	1.00

SALT CREEK

Midwest Refining Company

29 to 29.9 gravity	$ .90
30 to 30.9 gravity	.96
31 to 31.9 gravity	1.02
32 to 32.9 gravity	1.08
33 to 33.9 gravity	1.11
34 to 34.9 gravity	1.14
35 to 35.9 gravity	1.17
36 to 36.9 gravity	1.20
37 and above	1.23

MONTANA

(Effective Feb. 15, 1930)

Sunburst	$1.65
Cat Creek	1.48
Lake Basin	2.20

NEW MEXICO

(Effective April 11, 1930)

Artesia	1.05
Hog Back	1.43
Maljamar	.95
Jal and Lea	*

(*) West Texas price scale used by The Texas Company and Humble Oil & Refining Co.

CANADA

(Effective April 11, 1930)

Oil Springs	2.17
Petrolia	2.10

LOUISIANA-ARKANSAS

(Effective April 11, 1930)

Homer, Haynesville, Caddo, El Dorado, De-Soto and Crichton and Cotton Valley*

Below 28 gravity	$ .87
28 to 28.9 gravity	.92
29 to 29.9 gravity	.97
30 to 30.9 gravity	1.02
31 to 31.9 gravity	1.07
32 to 32.9 gravity	1.12
33 to 33.9 gravity	1.17
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.255
36 to 36.9 gravity	1.29
37 to 37.9 gravity	1.325
38 to 38.9 gravity	1.36
39 to 39.9 gravity	1.395
40 to 40.9 gravity	1.43
41 to 41.9 gravity	1.465
42 to 42.9 gravity	1.50
43 to 43.9 gravity	1.535
44 gravity and above	1.57

*Shreveport-Eldorado's postings stop at above 40 gravity.

The posting on Cotton Valley is same as Caddo. From 36 to 52 and above the regular gravity schedule is followed.

The Texas Company pays North Texas gravity scale in North Louisiana.

STEPHENS

Below 28 gravity	$ .76
28 to 28.9 gravity	.81
29 to 29.9 gravity	.86
30 to 30.9 gravity	.91
31 to 31.9 gravity	.96
32 gravity and above	1.01

SMACKOVER

Below 24 gravity	$ .90
24 and above	1.05

The Tank That Defies Corrosion

A battery of B. S. & B. Vapor Pressure Wood Tanks

Not Affected by Hydrogen Sulphide Gases

B.S.&B. *Vapor Pressure* WOOD TANKS

In Southwest Texas and the Panhandle, the Hydrogen sulphide gas which is found in sour crude, has proved to be detrimental to storage tanks; for the fumes have caused a grave corrosive problem.

After exhaustive experiments for a period of over two years, on every known metal and alloy, practical to use in storage tanks, our Research Engineers disclosed the fact that there is no metal practical to use in bolted storage tanks, impervious to the action of the hydrogen sulphide gas fumes. These experiments resulted in the development of the B.S.&B Vapor Pressure Wood Tank, (made of redwood), constructed very similar to the famed B.S.&B Vapor Pressure Bolted Steel Tank.

This tank is also supported by tie rods on the inside and is built to withstand a pressure of 16 ounces and a vacuum of 2 ounces under working conditions, with a reasonable factor of safety. The inside of this tank is so constructed that no metal is exposed to the oil, or the hydrogen sulphide gas fumes. Every metal part used on the inside of the tank, to give it rigidity and strength, is entirely insulated with wood. The tank is manufactured in: 250 barrel; High 500 barrel; Low 500 barrel; 1000 barrel sizes, at our Borger, Texas, Factory, and will be made at the new wood tank plant under construction at Odessa, Texas, and stocked at our Branches in Southwest Texas and the Panhandle.

"Service on the Dot"

[We also manufacture a B.S.&B. Gas-Tight wood tank for use in the storage of heavy gravity oil. This tank is built to hold one half ounce pressure and one half ounce vacuum.]

"Service on the Spot"

B.S.&B. Perfection *Vapor Pressure* STEEL TANKS

B.S.&B. Perfection Vapor Pressure Tanks are built as structurally correct as a spider web. A portable tank that protects the crude, and the tank itself is protected by the automatic safety valve that operates at 16 ounces pressure or 2 ounces vacuum. These tanks are used by some of the largest companies operating in the Mid-Continent and Rocky Mountain Fields.

We can make immediate delivery on either wood or Bolted Steel tanks. Let us know your tank requirements. Request a representative to call or write for descriptive literature. Please address Dept. A-21.

EFFICIENT B S & B SERVICE DEPENDABLE

Our Watchword QUICK SERVICE

Black Sivalls & Bryson INC.

BARTLESVILLE ~ OKLAHOMA

FLEXIBLE THINGS ENDURE

THE RAPIER BENDS LIKE A WILLOW BRANCH BUT DOES ITS WORK

THE FLEXIBLE CUPS ON THE GUIBERSON SWAB GIVE WAY TO THE LEAST WRINKLE - - BUT ENJOY LONG LIFE AND LIFT ALL THE FLUID

Fully Patented

A presumption used to exist in the oil fields that anything that was good had to come "busting" its way through, battling with everything it met and coming out in the end perhaps the worse for wear, but the winner. The greatest power we know for destroying this presumption has been the Guiberson Swab, with its pliable, flexible cups, which go about their work inoffensively yet so efficiently that the Guiberson Swab is doing most of the world's swabbing today.

The flexible cups on the Guiberson Swab, steered by guide wires, pass through wrinkled, dented or pitted casing without injury, at the same time preserving a close seal that allows no fluid to drop back in the hole. This seal is obtained from the pressure of the column of fluid, which forces the cup rims firmly against the casing walls; the heavier the column, the tighter the seal. Yet at no time does any appreciable wearing contact exist between the cups and the casing which might damage either, such as old fashioned swabs produce. In running in, pressure from below collapses the cups, allowing speedy passage. Cup rubbers are made from special composition, which will not deteriorate even after weeks of use in high gravity oil. Join the almost unanimous following of the Guiberson Swab.

"Better Be Safe Than Sorry"

THE GUIBERSON CORPORATION

Box 1106, Dallas, Texas

California Branch: 1506 Santa Fe Ave., Los Angeles

621 Kennedy Bldg., TULSA | 321 S. Osage St., PONCA CITY | 506 Trust Bldg. NEWARK, O.

GUIBERSON

BETTER BE SAFE THAN SORRY

United States Daily Average Production

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

1929	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
March	666,500	95,500	662,500	147,750	35,800	74,250	108,850	70,400	786,000	2,647,400	82,068,350
April	665,600	106,400	650,100	154,550	35,550	72,900	110,850	69,400	781,350	2,646,700	79,402,100
May	679,650	115,400	651,100	150,350	35,350	71,500	114,150	72,850	749,250	2,639,600	81,827,600
June	685,200	120,750	688,200	147,500	35,700	70,050	116,750	72,000	827,200	2,763,400	82,902,200
July	722,050	124,250	718,950	148,150	35,750	68,650	122,000	74,250	874,850	2,888,900	89,555,250
August	728,100	127,950	750,750	153,100	36,300	66,900	126,600	77,900	873,300	2,940,900	91,167,250
September	714,050	128,450	741,200	156,600	37,050	65,300	127,250	78,600	874,850	2,933,350	88,000,650
October	673,600	113,400	714,550	167,050	39,700	64,550	137,400	77,950	876,600	2,864,800	88,809,500
November	640,300	110,050	702,350	171,350	36,750	63,700	135,400	76,550	706,500	2,642,800	79,285,050
December	650,000	111,600	687,850	161,350	38,700	61,850	140,650	76,150	698,200	2,626,350	81,417,000
1930											
January	671,050	111,700	672,650	178,300	37,650	58,500	142,250	73,850	688,850	2,634,800	81,574,650
February	631,900	111,400	654,600	199,950	39,450	58,400	135,050	74,850	746,550	2,652,150	74,280,200
March	622,650	115,500	644,400	206,000	41,600	58,600	132,700	73,600	649,000	2,544,050	78,865,400
April 5	635,600	117,550	630,350	212,700	43,700	57,750	134,850	77,250	620,700	2,530,450	17,713,150
April 12	665,250	125,150	632,300	208,150	42,200	57,550	137,900	74,950	617,700	2,561,150	17,928,050
April 19	658,100	117,050	634,100	207,350	41,750	57,800	139,700	77,150	627,900	2,560,900	17,926,300
April 26	662,050	125,900	652,400	203,900	42,000	57,900	140,900	74,250	630,800	2,590,100	18,130,700
Increase	3,950	8,850	18,300	.....	250	100	1,200	.....	2,900	29,200	204,400
Decrease	.....	.....	.....	3,450	.....	.....	.....	2,900	.....	.....	.....

TEXAS
(Outside Gulf Coast)
PANHANDLE DISTRICT

	April 26	April 19
Carson County	8,950	9,700
Gray County	63,000	60,800
Hutchinson County	22,300	21,900
Wheeler County	550	700
Others	500	500
Total	95,300	93,600

NORTH TEXAS

Archer County	18,000	18,000
Burkburnett	8,300	8,050
Electra	11,100	11,300
Iowa Park-KMA	5,750	5,300
Montana and Cooke Cos.	10,650	10,600
Wilbarger	24,000	24,100
Others	2,000	2,000
Total	79,800	79,350

WEST CENTRAL TEXAS

Brown County	7,600	7,600
Callahan County	3,600	3,650
Coleman County	4,600	4,600
Eastland-Desdemona	5,500	5,500
Jack County	4,100	4,100
Palo Pinto County	700	700
Shackelford County	6,550	6,500
Stephens County	5,850	5,800
Throckmorton County	850	850
Young County	20,800	13,450
Others	1,400	1,400
Total	61,550	54,150

WEST TEXAS

Ector	9,800	8,100
Crane-Upton Counties	44,000	43,500
Crockett County	2,000	2,100
Howard County	40,000	40,100
Jones County	2,100	2,100
Mitchell-Scurry Counties	2,200	2,200
Yates	114,800	112,200
Pecos County	4,750	4,700
Reagan County	17,550	16,300
Winkler County	79,100	79,650
Others	2,700	2,800
Total	318,800	313,950

EAST CENTRAL TEXAS

Boggy Creek	3,600	3,650
Corsicana-Powell	6,100	5,900
Currie	300	300
Mexia	4,350	4,000
Nigger Creek	200	200
Richland	250	250
Wortham	900	850
Van Zandt	20,700	19,100
Total	36,400	34,250

SOUTHWEST TEXAS

Darst Creek	17,000	15,000
Dale	350	300
Laredo District	8,400	8,300
Luling	9,700	9,800
Lytton Springs	900	900
Somerset	1,400	1,300
Salt Flat	20,850	21,200
Others	1,950	2,000
Total	60,550	58,800
T'tl Tex. (outside Gulf Coast)	652,400	634,100

TEXAS GULF COAST

Barbers Hill	22,200	26,300
Batson	1,200	1,200
Big Creek	3,450	2,800
Blue Ridge	1,806	1,800
Boling	1,100	1,150
Damon Mound	600	600
Goose Creek	4,450	4,300
Hull	8,550	8,700
Humble	19,600	20,200
Orange County	2,400	2,300
Pierce Junction	10,500	10,350
Refugio	39,750	40,850
Raccoon Bend	10,200	9,000
Saratoga	1,000	1,000
Sour Lake	2,200	2,200
South Liberty	4,850	4,450
Spindle Top	16,550	15,600
Sugar Land	10,200	11,050
West Columbia	6,600	5,800
Washington County	1,750	1,750
Fannett	1,100	1,100
Port Neches	1,750	1,800
North Dayton	550	1,000
Esperson Dome	3,200	3,100
Others	8,100	7,300
Total	183,050	185,700
Texas Total	835,450	819,800

OKLAHOMA

Asher	2,050	2,100
Carr City	8,750	9,650
Logan County	6,600	6,600
Braman	3,500	3,500
Blackwell	3,300	3,300
Hubbard	1,600	1,600
Thomas	700	700
Tonkawa	7,800	7,800
Garber	4,750	4,750
Burbank	16,500	16,400
Osage (outside Burbank)	26,500	26,700
Cushing	14,050	14,300
Yale Jennings	8,600	9,350
Davenport	1,150	1,150
Bristow Slick	16,200	16,200
North Okmulgee	10,900	10,900
South Okmulgee	6,300	6,300
Cromwell	7,650	7,650
Papoose	2,850	2,850
Wewoka	3,700	3,700
Seminole	19,900	20,150
East Seminole	3,750	3,350
Bowlegs	20,250	21,200
Searight	11,000	10,400
East Little River	17,400	19,500
Little River	38,850	41,950
Earlsboro	40,000	38,950
East Earlsboro	41,450	39,450
Duncan District	7,700	7,450
Graham	3,500	3,500
Fox	1,250	1,250
Healdton	11,900	11,900
Hewitt	7,050	7,150
Scholem Alechem	13,700	13,750
Pearson	650	650
St. Louis	36,850	38,200
Allen	19,150	19,400
Maud	5,600	5,550
Mission	12,600	12,600
Oklahoma City	109,200	104,150
Sasakwa	13,650	10,550
Konowa	9,300	7,650
Others	63,900	63,900
Total	662,050	658,100

CALIFORNIA

Santa Fe Springs	130,700	130,500
Long Beach	99,000	98,800
Huntington Beach	28,200	29,000
Dominguez	9,800	9,700
Inglewood	17,600	17,600
Midway-Sunset	70,000	70,000
Ventura Avenue	46,200	44,000
Seal Beach	24,000	24,800
Elwood-Goleta	47,700	47,500
Kettleman Hills	15,600	14,000
Others	142,000	142,000
Total	630,800	627,900

KANSAS

Greenwood County	18,800	18,950
Florence-Covert	800	800
Peabody-Ebling	3,150	3,300
Eldorado-Towanda	14,300	13,450
Augusta-Fox Bush	2,950	2,900
Rainbow Bend	1,100	1,100
Russell	3,550	3,400
Churchill	4,450	4,300
Oxford	2,600	2,650
Sedgewick	21,000	20,900
Voshell	19,700	12,800
Others	33,500	32,500
Total	125,900	117,050

NORTH LOUISIANA

	April 26	April 19
Homer	3,400	3,450
Haynesville	4,500	4,550
Caddo Light	10,000	10,050
Caddo Heavy	2,850	2,900
DeSoto-Red River	3,100	3,100
Holly	1,050	1,150
Carterville	2,900	3,150
Cotton Valley	2,150	2,150
Urania	5,200	5,300
Zwolle	5,100	4,150
Others	1,750	1,800
Total North Louisiana	42,600	41,750

LOUISIANA GULF COAST

Lake Barre	1,000	1,100
Port Barre	1,750	2,300
Bayou Boullion	450	350
East Hackberry	2,500	2,600
Hackberry	1,300	1,300
Edgerly	500	550
Evangeline	900	900
Lockport	2,700	2,700
Sorrento	100	100
Sulphur Dome	4,300	4,300
Sweet Lake	100	100
Vinton	3,850	3,850
Others	1,400	1,500
Total Louisiana Gulf Coast	20,850	21,650
Louisiana Total	62,850	63,400

ARKANSAS

El Dorado	4,000	4,000
Champagnolle	4,600	4,750
Smackover Light	5,300	5,400
Smackover Heavy	40,300	40,500
Stephens	950	950
Nevada	850	1,000
Lisbon	1,000	1,000
Others	900	200
Total	57,900	57,800

MOUNTAIN STATES
WYOMING

Salt Creek	30,050	31,200
Grass Creek	2,000	2,200
Elk Basin	700	800
Big Muddy	2,050	2,050
Lost Soldier	3,150	3,250
Rock River	2,200	2,200
Lance Creek	150	150
Oregon Basin	4,450	4,450
La Barge	2,100	1,900
Others	3,700	2,500
Total	50,550	50,700

MONTANA

Cat Creek	1,200	1,200
Sunburst	5,600	6,000
Pondera	1,850	3,200
Others	50	50
Total	8,700	10,450

COLORADO

Moffats (Craig)	1,000	1,100
Fort Collins	1,400	600
Florence	550	1,450
Others	1,450	1,400
Total	4,400	4,550

NEW MEXICO

Table Mesa	100	100
Artesia	700	700
Hogback	450	450
Rattlesnake	450	1,500
Bal. Lea & Eddy Counties	8,000	7,800
Others	900	900
Total	10,600	11,450
Total Mountain States	74,250	77,150

EASTERN STATES

(Including Ill., Ind., Ohio, W. Va., Pa., Ky., N. Y.)	129,000	128,000
Michigan	11,900	11,700
Total Eastern States	140,900	139,700

PRODUCTION SUMMARY

East of Rockies	1,885,050	1,855,850
Total U. S.	2,590,100	2,560,900

MANY MODERN WONDERS HAVE NOW BECOME COMMONPLACE

TELEPHONES were a novelty within the memory of many of us. Yet telephones were common when the first successful commercial treatment for "cut oil" - - - the Tret-O-litE Process - - - was developed. Then lakes and rivers of cut oil were being discarded and giant producing wells abandoned because of salt water. Nowadays, when oil starts cutting, producers call in the Tret-O-litE man as naturally - - - and as confidently - - - as they turn to the telephone when they want to talk to some one at a distance.

Hundreds of millions of barrels of oil have been recovered - - - thoroughly and economically - - - by use of the Tret-O-litE Process.

WM. S. BARNICKEL & COMPANY
ST. LOUIS, MO.
Offices and Plant, Webster Groves, St. Louis County, Missouri

Tret-O-litE
Reg. U. S. Pat. Off.

PERSONAL MENTION-MEN YOU KNOW

R. C. Edwards, North Louisiana and East Texas scout for the Gulf Refining Company with headquarters in Shreveport, underwent an operation at the Tri-State Hospital in Shreveport recently for appendicitis. He is convalescing.

J. R. Munce, vice-president of the Arkansas Natural Gas Corporation, has returned to his headquarters in Shreveport, after a trip to Hawaii.

Mr. and Mrs. E. Cutler Dawes of Shreveport have returned home after a trip to Europe. During their visit abroad they were guests of their uncle, Ambassador Charles G. Dawes in London. Mr. Cutler Dawes is secretary-treasurer of the Ray-Dawes Drilling Company.

Edwins Higgins, managing director of the California Oil and Gas Association, addressed the first annual meeting of the California Committee on Public Safety at Oakland, April 24, speaking on "The Work of the Oil Industry in Preventing Traffic Accidents."

Herbert R. Macmillan, president of the California Oil and Gas Association, delivered an address on "Curtailment in California" at the annual meeting of the United States Chamber of Commerce, held in Washington, April 21.

Dr. George Otis Smith, head of the U. S. Geological Survey, is expected to visit California in the near future to consider plans for orderly development of the Kettleman Hills field.

George F. Getty, independent operator and head of George F. Getty, Inc., is seriously ill at his home in Los Angeles. He is 75 years old and some time ago suffered a paralytic stroke.

Sir James Currie, president of the Lago Petroleum Corporation, is visiting Southern California fields.

Tom V. Coleman, assistant manager land department in Fort Worth district offices of The Texas Company, has resigned, and is now making his home in Houston.

Thomas W. Streeter, chairman of the board of directors for the Simms Petroleum Company, New York City, visited the general offices of the company in Dallas, Texas, last week.

Burton W. Hink, member of the statistical staff of Humble Oil & Refining Company, Houston, was a visitor in Tulsa and other Mid-Continent points during the past week.

Frederick G. Clapp, consulting geologist and petroleum engineer, after spending the past two years mainly in personal investigations in Europe and the Near East, has returned to New York, where his office address remains at 50 Church Street, in addition to a newly established working office at Tudor Arms, 34 Ponsfield Road West, Bronxville, New York.

Howard C. Martin, Paraffine Companies, Inc., San Francisco, has been transferred to Dallas, Texas, to take charge of sales in the Mid-Continent and Gulf Coast areas. The company will specialize on marketing its pipe covering felt along with other Pabco products, through the new branch office.

Hale B. Soyster, formerly the supervisor of the United States Geological Survey in the Mid-Continent with Muskogee, Oklahoma, headquarters, has arrived in Casper and assumed his position as supervisor of the Mineral Leasing Division, United States Geological Survey. He takes the place of Jack Steele who resigned some time ago to enter the services of the Sinclair Consolidatd Oil Corporation, for work in Africa.

Commander A. A. Baker of the United States Navy has been appointed to succeed Lieutenant Commander C. A. Trexel as inspector of United States Naval petroleum and shale reserves in Wyoming, Utah, and Colorado, with Casper headquarters. Lieutenant Commander Trexel was recently appointed to go to the naval station at Cavite, in the Philippine Islands to be in charge of public buildings. He is to leave Casper about July 2, sail for the Philippines July 22, and arrive on August 17. Commander Baker will arrive in Casper about June 25 from San Francisco.

T. C. Skeen, an official of Columbian Steel Tank Company, paid a business visit to the Rocky Mountain states last week.

D. R. Brown, vice-president of the Oil Country Specialties Manufacturing Company of Coffeyville, Kansas, was in the Rocky Mountain states on one of his regular visits last week. He made the trip in his Stinson plane.

Claude Wild, former manager of the Board of City Development, San Angelo, Texas, has been appointed executive vice-president of the Texas Division of the Independent Petroleum Association of America, and is located at the Fort Worth headquarters of the latter organization.

J. Edgar Pew, vice-president, Sun Oil Company, concluded a short vacation in California with a visit to the Dallas and Tulsa offices of the company last week, and has returned to Philadelphia, where he has established headquarters after moving from Dallas early this year.

G. S. Rollin, vice-president in charge of production for Shell Petroleum Corporation, St. Louis, joined officials of the Dallas district offices of the company in observing operations late last week on the company's LaRue wildcat test in East Central Texas. A successful oil strike on the LaRue block would greatly enhance Shell Petroleum Corporation's position in Texas.

M. J. Bashara, a native of Syria and an active oil operator in the North Texas district in former years, died in Wichita Falls, Texas, April 25 after a long illness. He was a major stock owner and head of American Refining Company for a number of years and has lately confined his efforts to joint operations with his three sons.

Humble Revises Sunday Shut-Down

Houston.—Modification of present curtailment in order to bring its supplies more nearly in line with consumption demand, has been announced by Humble Oil & Refining Company through its president, W. L. Farish. His full statement follows:

"On March 4 of this year, the Federal Oil Conservation Board suggested to the petroleum refining industry that it adopt a Sunday shut-down plan as a means of preventing the further accumulation of stocks of gasoline, and of bringing supplies more nearly in line with consumption demand. A number of refining units adopted the suggestion of the Federal Oil Conservation Board, and the gasoline situation has to this extent been improved.

"While the operations of the Humble Oil & Refining Company have been in balance for many months past, this company in adopting the suggestion of the Federal Oil Conservation Board, went further and extended the Sunday shut-down to drilling, producing and transportation operations. This extension of the suggestion to operations other than refining has not been generally adopted by others in the industry, and Humble Oil & Refining Company now finds it necessary to modify its present curtailment in order to bring its supplies more nearly in line with consumption demand. It is the purpose of Humble Oil & Refining Company not to let its stocks of gasoline exceed stocks on hand the same date a year ago."

Oklahoma--Kansas Field Notes

FLOYD L. SWINDELL, *Staff Representative, Tulsa, Oklahoma*

Oklahoma City Casing Schedule Fixed

Oklahoma City.—Two strings of casing, in addition to the surface pipe, will become a drilling requirement for the Oklahoma City pool. Ed Hicks, secretary of the Oklahoma Corporation Commission, has announced that the commission has decided to adopt this provision, following a hearing April 26, when producers offered conflicting opinions as to the wisdom of the two strings of casing.

Surface pipe must be set at 250 feet and cemented to the top of the ground. The second casing must be set around 2000 feet and cemented. The third string must be set as near to the producing formation as possible and cemented.

This drilling regulation and others is the result of a request from the commission. Producers and contractors of the pool met in Oklahoma City and voted on practices they considered essential to safe drilling and completing of wells. These opinions were put into a code by a committee, of which M. J. Kirwan of Indian Territory Illuminating Oil Company was chairman.

A hearing on the code was held before the Corporation Commission, April 26. Some opposition to the second string of casing was voiced. Both producers and contractors held that mud of sufficient weight would overcome any necessity for the pipe at 2000 feet. Others, however, held that this string of pipe is essential to safety.

Oklahoma City North End Sets Big Well Record

Oklahoma City.—During the week ending April 27, competition has been keen between the north and south ends of the Oklahoma City pool. Operators of the north end established a record for large wells completed within a short period and inside a limited area. Tom Slick Oil Company's Bailey 1, NW SW Section 1-11n-3w came in for 11,844 barrels in 22 hours, Skelly Oil Company's Dunn 1, on the center east line NW SW Section 1-11n-3w had an initial flow of 185 barrels during the first 15 minutes, and Tom Slick Oil Company's Houghton 1, in the center of the north line NE NW SW Section 1-11n-3w topped the Arbuckle lime at 6374 feet and produced 143 barrels in 12 minutes at a total depth of 6452 feet. All three wells were completed in less than 24 hours and inside an area of less than 40 acres.

Sunday was a busy day for the south end with three new wells on the Hoopes farm in the NE Section 31-11n-2w. Slick and Anderson-Pritchard's Hoopes 7, NW SE NE Section 31-11n-2w, had an initial volume of between 50,000,000 and 75,000,000 cubic feet of gas with only a slight show of oil, Skelly Oil Company's Hoopes 5, NW NE NE Section 31-11n-2w, gauged 77 barrels in the first 15 minutes, and Skelly Oil Company's Hoopes 4, SE NW NE Section 31-11n-2w which bridged shortly after it blew in. Skelly Oil Company's Hoopes 2, SW NW NE Section 31-11n-2w topped the lime at 6433 feet and had an initial flow of 1846 barrels in 11½ hours at a total depth of 6531 feet.

The largest well of the week was completed by Coline Oil Company's Warran 3, NW SE SW Section 18-11n-2w, which was estimated at 400 barrels hourly. This well is located on the east edge of the pool.

One hundred and five Arbuckle lime wells have been completed and of the number only 76 are showing water, indicating that proration and the application of back-pressure are materially reducing the water production. With 94 completions in the sand horizon only a few wells are making water.

Production in Oklahoma City Extended West

Tulsa.—The Oklahoma City pool was extended a half mile west Monday, April 28, when Hall and Briscoe's Lindsey 1, NE SE NW, 14-11-3w, which encountered the Detrital zone at 6200 feet, topped the sand at 6389 feet and was completed at total depth of 6461 feet. The well flowed 5186 barrels of oil in a 12-hour test.

Reiter-Foster Well Flows 1000 Barrels Daily

Tulsa.—Reiter-Foster Oil Company et al's Finnell 1, in NE NW Section 8-19n-1w, completed during the week ending April 19, has produced an average of about 1000 barrels daily, flowing through a ¾-inch choke. Rigs are nearing completion on the Finnell farm, SE SW Section 5-19n-1w and on the Reynolds farm, NW NE Section 8-19n-1w, being north and east offsets to the new well. The Minnehoma Oil Company's R. B. Shodel 1, SE NE Section 7-19n-1w, is a location. This test will be located aproximately a half-mile southwest of Finnell 1 and a little over a mile southwest of Reiter-Foster Oil ompany's M. G. Kinnaman 1, both of which are producing from the Misener horizon. The latter well is the original test of the area and was plugged back to the Misener dolomite after having found water in the Wilcox and Simpson sands at 5002 feet.

Voshel Pool Curtailment Extended Another Month

Tulsa.—The Voshel pool of McPherson County, Kansas, will remain under proration from May 15 until June 15. This decision was made by producers in session at Wichita, April 23. A decision also was made to discontinue swabbing wells, effective May 1.

Present output of the field is being held at 19 000 barrels daily. With the entry of Skelly Oil Company as a buyer around May 1, the allowed output of the pool may be raised to 22,000 barrels daily. This company will have a pipe line to the field shortly.

Tom Johnson, umpire of the district, reported that the pool had 41 completed wells, with two new ones shut in, and that the potential output of these was 60,000 barrels.

Drilling for gas in Western Kansas is drawing major attention at present. Morton County, where gas has been found in the Colorado shale, is favored for this gas development. The Moody-Seagraves interests are active in this area. This concern and others have carried on an extensive leasing campaign, which covers several Kansas counties and extends into the Oklahoma Panhandle.

Variable Sand Conditions In Konowa Area

Tulsa.—Development in the Konawa pool of southern Seminole County indicates a variable sand condition where failures may occur at any place regardless of position on structure. Within the four sections immediately surrounding Twin State Oil Company's Charles 2, SW NE NE Section 20-6n-6e and W. B. Pines' Cindy Charty 1, NE NW SW Section 16-6n-6e, the two gushers of the field, nine apparent failures have been completed. These tests, although not all definitely abandoned, have failed to find commercial production in the expected horizon. The Twin State Oil ompany's Charlie 1, a direct east offset to Charlie 2, found water in the sand at 3030 to 3065 feet. W. B. Pines' Charty 1 had the sand at 2861 to 2874 feet and Twin State Oil Company's Charlie 2 at 2955 to 2962 feet.

Grand Junction, Colorado.—This city has voted to give a franchise for natural gas to the Fulton Petroleum Corporation, well-known Montana oil operating concern. It will pipe gas from Garmesa Dome, 26 miles northwest of here, and will link the towns of Fruita, Clifton, Palisade, Delta, Olathe and Montrose, Colorado, into the system eventually.

Tulsa Geologists Hear Research Chairman

Tulsa.—At a meeting of the Tulsa Geological Society Monday evening, April 21, Dr. Alex. W. McCoy, vice-president of E. W. Marland, Inc., and national chairman of the Research Committee of the American Association of Petroleum Geologists, spoke on the work of the committee. Structure making forces were divided into four classes—lateral pressures, differential compactions, sinking of basins, and vertical uplifts. Through a study of stratigraphy it is believed that much will be learned concerning the accumulation of oil in certain structures and its absence in others. The committee is also making a study of source rocks.

A. & M. to Share Funds From University Oil

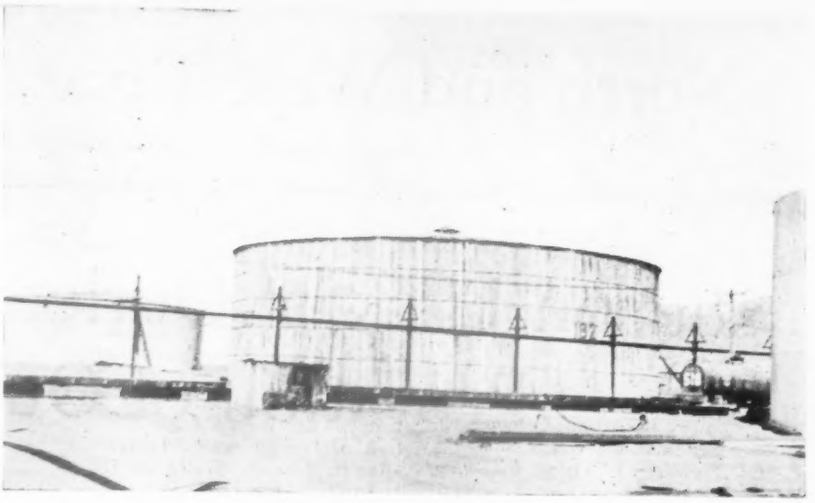
Austin, Texas.—Texas A. and M. College, located at College Station, Texas, will participate in the oil royalty funds of the University of Texas as the result of an agreement reached April 21 following a conference between the board of regents of the University of Texas and the board of directors of Agricultural and Mechanical College. The legislature will be requested, at its next session, to amend the law to permit A. and M. to participate in the university funds now available. The oil royalty fund now totals more than $14,000,000.

Mills Bennett in New Quarters

Houston.—The Mills Bennett interests, including Mills Bennett Production Company and the Liberty Pipe Line Company, have moved their headquarters from the Second National Bank Building to the new Gulf Building, where they now occupy the thirty-fourth floor. Mills Bennett Production Company was a pioneer operator at Barbers Hill, where it now has considerable producing properties, and the company is also developing Allen dome, Brazoria County, having taken over operation of the leases of Shell Petroleum Corporation there. Liberty Pipe Line Company operates a line connecting Barbers Hill field with deep water on Cedar Bayou, which leads into the Houston Ship Channel.

Cameron Parish

Houston. — Vacuum Oil Company's Cameron Meadows Land Company 1, first test on a seismograph prospect in Cameron Parish, Louisiana, was drilling early this week at 3800 feet in sticky shale. Fourteen drill stem tests have been made in this well, including one in a particularly good sand, although only seven feet in thickness, found last week around 3750 feet. Location of this well is 2620 feet south and 1960 feet west of the northeast corner of Section 21-14s-13w.



Bamboo Used for Insulating Tanks in South America

REFINING engineers connected with the Talara plant of the International Petroleum Company of Peru long ago hit upon an eective method of insulating steel storage tanks to protect them from evaporation losses caused by the intense heat of the tropical sun. One of the engineers in observing the structure of bamboo trees, noticed that the walls of these hollow canes are composed of vast numbers of infinitely small cellular spaces, forming a natural non-conductor of heat. This gave him the basis of a useable idea, which he readily adopted for the protection of his company's gasoline tanks.

Sending to Guayaquil for a supply of bamboo poles, which when split and rolled out flat constitute a popular building material among natives of tropical countries, he proceeded to construct a bamboo covering for the tanks which he wished to protect. In order further to carry out the idea of dead-air spaces as effective in insulation, he built a frame of light angle-iron entirely surrounding each tank, at a distance of two feet away from its roof and sides. This frame he covered with a roof and walls of split bamboo, each cane or pole being approximately equivalent to a ¼ inch by 12 inch board when split and crushed out flat.

The scheme proved entirely successful, being even more efficient than aluminum paint. Tests made before the application of the bamboo insulation showed evaporation losses approximating one per cent per month, or from 10 per cent to 12 per cent per annum, on 60-62 gravity gasoline. Another test made after the construction of the false roof and walls showed a loss of only 51 barrels in 59 days from a 65,000-barrel tank, or less than ½ per cent per annum.

This one simple idea saves from $15,000 to $20,000 per tank per year. Fortunately, it can also be adopted for insulating crude storage tanks in tropical countries where bamboo is plentiful.

Williamson County Field Extended Westward

Taylor, Texas. — W. D. Anderson's Lawrence 1 in the Chapman field, southern Williamson County, came in April 29 as a particularly encouraging well for operators there, yielding large production and extendipg the field westward. The well filled two 500-barrel tanks in two hours and seven minutes, and was subsequently reported flowing at the rate of 5000 barrels daily. Total depth of the hole is 1862 feet, and although the producing formation was not definitely identified it was reported as being probably serpentine.

This producer is 2200 feet west of E. L. Chapman's Anderson 1, discovery well of the field, and is 2300 feet due south of Marts et al's T. P. Simmons 1, the large producer which blew out last week, flowing oil and later was on fire for a while.

There are about one-half dozen producing wells in the field now, and 15 rigs are in operation there.

Corsicana, Texas.—Producing, refining and marketing properties of Central Texas Refining Company were placed in receivership here April 18, and R. L. Wheelock, drilling contractor and mayor of Corsicana, was appointed receiver by the court. The company is controlled by the Cranfill-Reynolds Company, Inc., which is in turn controlled by the Moody-Seagraves interests. The principal producing properties are held in Navarro, Milam and Brown Counties, while refineries are being operated at Brownwood, Luling, Minerva and Luling. The receiver has annonuced that all properties will be operated as heretofore.

North and West Texas Field Notes

H. H. KING, *Staff Representative, Fort Worth, Texas*

Judson Lack of Outlet May Force Proration of Output

SAN ANGELO.—Crude congestion is making its appearance in the Judkins field, Ector County, since the output of the field reached a new daily peak flow of 12,000 barrels from 21 completed and semi-completed wells early this week, with only one of the four pipe line companies accepting oil for purchase. Burford Oil Company owner of a small line supplying oil for its refinery at Pecos, Texas, is the sole crude buyer operating in the field.

This company has contracted, or committed itself to take oil from the properties of three separate interests, thereby assuring a full line. Lines of Gulf Pipe Line Company, Humble Pipe Line Company and Magnolia Pipe Line Company now connected to the field are not interested in outside crude purchases, while both Shell Pipe Line Company and The Texas Pipe Line Company are temporarily eliminated as invaders of the field with lines, through having worked out crude swapping arrangements. The latter company is reported to have made deal to exchange Judkins field crude with Humble Oil & Refining Company for a like amount of oil in another field.

Proration May Result

Proration of production may result from this inadequate crude market outlet for the Judkins field, but such a proceedure hinges on successful completions being made from two tests now nearing the critical stage one mile or more to the northwest of the field proper. Opinion of operators is divided as to whether the field will be extended due north, or take a bend to northwest at the railroad, while some have been contending that structure may break off just north of the railroad.

Independent Oil & Gas Company and Tidal Oil Company's Edison 1, located in Section 6 and on the north side of the railroad, will throw some light on the production trend in a few days, having encountered the brown and white lime horizons higher than found in Shell Petroleum Corporation's 500-barrel well. Edison 1 was drilling below 3400 feet early this week. Texas Pacific Coal & Oil Company's McKenzie 1, located three-quarters of a mile northwest of the above test, obtained the brown lime at 3265 feet. This test is low on structure, but not eliminated as a prospective producer.

Judkins field maintained an average of 9355 barrels daily during the past week, and is assured a substantial increase during the next few weeks because of the number of tests in process of completion, or at work in landing last string of pipe to drill in. In addition to the 18 completed wells, the field has 24 other tests underway, and derricks and rigs up on 11 others.

Shell Petroleum Corporation will not enter the field with its West Texas pipe line system as previously anticipated upon the completion of its first producer, but has arranged to exchange up to 400 barrels daily from its single lease for a like amount of oil being taken from Gulf Production Company's properties in the McCamey field. Shell Petroleum Corporation's E. J. Jones 1, located in the southeast corner of Section 6, has been given a connection by Gulf Pipe Line Company in accordance with the swapping agreement. Shell Pipe Line Company was expected to enter the field and buy oil.

Burford Oil Company's four-inch line connecting with the Judkins field is booked to capacity, and proration of runs from leases delivering in excess of contracted amounts will be required. This company has a contract for one year to take 1500 barrels daily from Landreth Production Corporation, and has committed itself to take between 500 and 1000 barrels daily from the Simms Oil Company and Phillips Petroleum Company 160-acre tract, while market is also to be provided for the jointly owned leases of Skelly Oil Company and Amerada Petroleum Corporation. About 500 barrels daily was being run for purchase from leases of Humble Oil & Refining Company et al until the completion of the Simms Oil Company et al producer late last week. Humble Oil & Refining Company is offering to sell 2000 barrels daily, and is not interested in making crude purchases in the field, even though Humble Pipe Line Company recently completed a six-inch extension line to the field.

Magnolia Pipe Line Company's crude runs from the Judkins field are restricted to common carrier service performed for Cosden Oil Company, with a tentative limit of 5000 barrels daily for nine months. However, the latter will be allowed to transport a greater volume of oil daily to its Big Spring refinery if the oil is available, and two 80,000-barrel steel tanks are held for emergency storage. Other operators have not provided any large tankage in the field. Gulf Pipe Line Company's runs are to be restricted to handling oil produced by Gulf Production Company and by Shell Petroleum Corporation. A surplus of West Texas oil is being produced by Gulf Production Company and sold to Atlantic Oil Producing Company from Winkler County properties at rate of 10,000 barrels daily.

Sunray Oil Company, Tulsa, joined the ranks of operating companies in the Judkins field last week when an undivided one-half interest in 141 acres, located north of the producing area in Section 6, was acquired from the Llano Oil Company, Fort Worth, for the drilling of a specified number of free wells. The first location has been staked in the southeast corner of the tract, creating offsets for Shell Petroleum Corporation, Pure Oil Company and Gulf Production Company.

Simms Oil Company-Phillips Petroleum Company's University 1 has been completed from regular lime horizon at 3620-70 feet, making 850 barrels initial, and the rig moved to another location. This well is to be equipped with 2½-inch tubing to balance the gas-oil ratio, as previously agreed upon by the majority of the operators. Skelly Oil Company and Amerada Petroleum Corporation's University 1-A caught fire late Saturday, April 26, while being shot in lime at 3625-3722 feet, and burned for 24 hours, resulting in almost total loss of the rig.

Phillips Petroleum Company is soliciting natural gas contracts for the purpose of erecting a natural gasoline plant in the Judkins field, and has booked sufficient supply to proceed at once with construction work on a large plant. This company is offering 25 per cent royalty for gas testing up to two gallons of gasoline per 1000 cubic feet, and 33 1/3 per cent

[THE SEVENTH OF A SERIES OF EIGHT AD-ITORIALS ON OIL]

OIL and the BANKER

IN 1901, the year oil was discovered in Spindletop, there was practically nothing invested in the oil industry in Texas. There is now over a billion and a quarter dollars so invested, including investments in leases, drilled wells, pipe lines, refineries, tank cars, and sales equipment.

■

Not only the banker but every business man in Texas has a high regard for the oil industry which is paying well over 40 per cent of the total taxes paid in our State. He realizes, too, that during the last twenty-five years the oil industry has brought more money into our State than all other industries combined. The payrolls of the oil companies of Texas aggregate yearly $250,000,000. Oil is the only industry of any magnitude that manufactures more of its raw materials than is produced in the State. Millions of acres of waste or grazing land is given new value through lease rentals and bonuses. According to famous geologists there are still over 150,000,000 acres of land in Texas on which it is possible to discover oil fields.

■

Money will travel around the world for a difference of ½ of 1 per cent in earning rate, providing the security is absolutely safe. The faith of the Federal Reserve Banks, Farm Loan Banks and Insurance Companies in Texas is gradually causing interest rates to approach a parity with the East. The benefits accruing to Texans from this lending of money to Texas are many. When more money comes as permanent capital to build up Texas industries, the benefits will be still greater.

■

Texas welcomes outside capital. What the oil industry and other industries have accomplished is assurance that money is profitably employed in developing the resources of the Lone Star State.

HOUSTON • • • TEXAS

royalty for that yielding more than two gallons. Skelly Oil Company has also made inquiries regarding gas contracts.

Wildcat Test at 2400 Feet

Hard anhydrite with streaks of lime is being encountered by the wildcat test of Cranfill Bros. Oil Company and Gulf Production Company on the Tubbs ranch while drilling near the 2400-foot level. This test is being counted upon to uncover a new oil field in western Crane County because of logging key formations exceedingly high, with shallow showing of gas. The top of the brown lime is expected within the next 200 feet.

P. H. Williams et al's wildcat test on the Sugs ranch, Irion County, made about 100 feet of new hole during the past week to strengthen its record for being the deepest cable tool drilled hole in the world. A short liner was set on account of cavings at 8800 feet, and late last week the tools were making progress in lime at 8850 feet. Only California has deeper drilled holes. Big Lake Oil Company's University 1 "C", Big Lake field, is drilling in grey lime below 8640 feet, but has failed to pick up the expected heavy flow of oil and gas. The company is digging cellar for its fifth deep test.

New Finley-Brown Wells Boost Brown County

Amarillo, Texas.—Prolific wells being completed on the north end of the Finley-Brown field are reflecting a steady boost in the crude output of Gray County, which averaged 63,170 barrels daily during the past week, or approximately 2100 barrels greater than the daily average maintained during the previous week. Further production increases are in store for this field through approaching completion of a number of tests in the known flush area, while field work is spreading. The principal crude purchasers in Gray County are participating in this activity, and are inclined to sidestep new connections in order to reserve available line capacity and storage for forthcoming completions. This condition is making it rather difficult for the smaller operators to obtain an adequate market outlet, and has forced several into erecting refineries, or making alliances with independent refiners.

Wilcox Oil & Gas Company completed the largest producer of the group recorded during the past week when Coombs-Worley 13 gauged 3650 barrels of high gravity oil at 2785-2814 feet. This producer is located in the northeast corner of Section 37. Coombs-Worley 11, located in the southwest corner of Section 35, and a northeast diagonal offset to the above big producer, missed the prolific oil horizon. An estimated flow of 25,000,000 cubic feet of gas was encountered at 2878-2902 feet, and 350 barrels of oil production was developed at 2885-2902 feet. Gulf Production Company's Coombs-Worley 1, located in the southeast corner of Section 38, and an offset to these contrasting wells, was reported last week as having been completed at 2906 feet, making 300 barrels oil and 780 barrels water on initial gauge. Wilcox Oil & Gas Company uncovered the first oil producer in Gray County, and recently acquired a refinery at Pampa to provide a more dependable crude market. The Company is completing a new 80,000-barrel tank in the field.

Phillips Petroleum Company strengthened its lead over all other operators in the Panhandle district with daily production, which averaged 19,810 barrels daily during the past week, through completions on the north end of the Finley-Brown field. This company's J. E. Wright-Wood 2, Section 13, registered an initial production of 3300 barrels of high gravity oil with 15,000,000 cubic feet of wet gas from granite wash formation at 2840-50 feet. Unusually heavy gas production has appeared in the company's two tests now being completed on the Coombs-Worley-Foxx 80-acre lease, Section 36. Coombs-Worley-Foxx 1, was completed last week making 40,000,000 cubic feet of gas at 2784-2870 feet, with 1300 barrels oil coming from granite wash at 2850-70 feet, and Combs-Worley-Foxx 2, located on the banks of the river, developed a flow of 55,000,000 cubic feet gas at 2750-75 feet, with a spray of 15 barrels oil per hour at 2775-2805 feet.

Dixon Creek Oil Company's R. F. Cheatham 1, located in the Pantex pool, gave Hutchinson County its first oil producer of any consequence in many weeks, by flowing 800 barrels natural at 3065-75 feet during the past week. A slight show of water appeared at 3076 feet, and the well was plugged back one foot.

Gibson Oil Corporation et al's W. E. Bentley 9, located in the Shamrock field, Wheeler County, has been completed with an initial flow of 620 barrels oil and 200 barrels water from granite wash at 2300-39 feet. This well is also making about 5,000,000 cubic feet of gas at 2210-2300 feet.

Drilling Rush Under Way In Graham Field

Wichita Falls, Texas.—More than a dozen tests are underway or contemplated within one mile radius of the 20,000-barrel producer completed April 8 in the Graham field, Young County. Six of these tests have started drilling, and are being pushed at top speed so as to share in the flush production offered by the 3700-foot lime horizon should it prove prolific over a wide area. J. P. Nash-Bob Windfohr and associates' McCloud 1 is holding at 250 barrels oil and 145 barrels water per hour after registering the record initial flow from creviced formation at 3752-59 feet, and the flow is partially pinched to retard water encroachment. Prairie Pipe Line Company and the Texas Pipe Line Company are running the oil.

Tom B. Slick, Tulsa, and associates and Roeser-Pendleton, Inc. et al have two tests each drilling to the McCloud horizon. The following are also included in the group that are taking part in the deep drilling program: L. G. Bradstreet Company et al, Panhandle Refining Company, Kay et al, Nash & Windfohr Oil Corporation et al, and Tower-McKanna, Inc.

Young County dropped from its peak production of 24,340 barrels daily during the first week after the completion of the unusual producer to a daily average of 30,965 barrels during the past week. Field work in the county is growing rapidly, especially in the shallow sand area on the north end, and in the Kisinger-Jarnigan field, while development of the deep lime horizon is providing work for many strings of cable tools.

Attractive shallow producers scored lately on the north end of the Olney townsite and other new pools in the upper part of Young County has placed the county to the front on weekly completions, and considerable temporary flush production is furnished by these shallow wells. The Olney townsite pool is the most prolific shallow strike made in the county in several years, and the smaller operators are having their inning while it lasts. Flowing wells from the 1075-foot horizon are quite common.

Gulf Production Company's wildcat test on the J. T. Donald farm, located in southwestern Cooke County, resumed drilling late last week after testing one barrel of oil per hour from sand at 2672 feet, and April 28 was drilling at 2680 feet. This test is located in the John Guffey Survey, abstract 1545, and is slated to go to the 4000-foot horizon. In the southeastern part of the county, Lloyd Oil Corporation's wildcat test on the Jacobs farm, encountered a good showing of dead oil from sand at 1561-70 feet after cementing pipe at 1560 feet. No water was in evidence when the well was tested for production, and it will be deepened.

Fourth Producer at Hankamer

Houston.—Gulf Production Company completed Boyt 5 in the Hankamer field, southern Liberty County, on April 28. Thirty-six feet of screen was set at total depth of 2691 feet, and during the first six hours the well flowed through a three-quarters-inch choke at the rate of 800 barrels daily, producing 21 gravity pipe line oil, 10-inch casing having been set in this well at 2750 feet. Boyt 5 is 500 feet east of No. 2, also a producer.

There are now four producing wells at Hankamer, all being the property of Gulf Production Company, which found the field in 1928 using seismograph, and which holds leases covering most of the field. About 10 days ago Gulf Pipe Line Company began operating a new eight-inch carrier connecting the field with its main line at Sour Lake, affording the first market outlet for Hankamer crude.

About a week prior to completion of the above new well Gulf Production Company's Boyt 4 blew out from a gas sand at 2750-2825 feet, and later sanded up, and the rig and derrick are now being repaired, having been partially wrecked.

Favorable Progress Made on Van Field Line Outlet

CORSICANA, Texas. — Favorable progress is being made by the two welding crews engaged in building the Pure Van Pipe Line Company's 10-inch carrier from the Van field to the refinery and tidewater terminals of Pure Oil Company at Smiths Bluff, Texas, and more than 70 miles of the line had been welded late last week. A crew of seven welders each is working on the north and south ends, and indications are that the line will be completed ahead of schedule. It is to have a total length of 210.93 miles, including the unit now transporting crude from the field tank farm to a tank car rack at Chandler, with intermediate pump stations at Rusk and Woodville.

Van field is averaging about 21,000 barrels of crude daily, and until a direct trunk line connection is available the group of operators participating in the unit plan of development with Pure Oil Company and royalty owners, are penalized about 20 cents per barrel under Mid-Continent gravity scale prices. Pure Oil Company is marketing all the current production, except about 5000 barrels daily going to its field storage, through tank car shipments.

Adverse developments recently on and around acreage contributed to the Van field unitized block by Humble Oil & Refining Company probably removes this company as a prospective invader of the Van field with a line, toward the close of 1930 when Pure Oil Company's exclusive crude marketing rights expire. The latter company, through its subsidiary the Pure Van Pipe Line Company, has transportation facilities in sight for between 30,000 and 36,000 barrels of crude daily. Van field is now credited with a potential output of about 100,000 barrels, and the number of producers in the field will be greatly increased by the time the direct pipe line outlet is completed in late June or early July. Only a comparatively short line would be required for Humble Pipe Line Company to extend to Van, and such is also true of The Texas Pipe Line Company. The Texas Company is an important percentage owner in the oil producing area at Van. Both Shell Petroleum Corporation and Sun Oil Company have fared well in having their acreage contributions to the unitized area fall within the producing zone, but neither of these are prospective pipe line builders, unless additional oil strikes are made in the district.

Pure Oil Company's A. W. Ellison 1, located southwest of the field, is rated at 500 barrels daily at 2870-2934 feet, and indicates an absence of flush crude yield on this side of the structure. Pumping equipment is being installed on the company's R. C. Crim 1, which was the first test in the field to drill into water, having plugged back from 3082 to 3037 feet. Pure Oil Company and Hill's Peters 1, located to the northeast, has been completed making 500 barrels after plugging off bottom hole water at 3023 to 2965 feet. Humble Oil & Refining Company's W. Freeman 1, which was the first try for production made on acreage contributed to the unitized area by the company, is trying to make a commercial pumper after plugging back from water at 3023 to 2991 feet.

LaRue Test Fails

Shell Petroleum Corporation's wildcat test on the LaRue block, Henderson County, failed to produce when cored and drilled to 3310 feet early this week. This wildcat test is on the S. T. Stephens 117-acre farm, I. D. Owen Survey, and about 13 miles southeast of Athens. Pecan and Austin chalk horizons as well as other key formations correlated unusually high in this test when compared to old dry holes in the general vicinity, but shallow showings of oil and gas that usually prevail in producing areas failed to register. Geologists for the company called the top of the Woodbine sand series at 3175 feet, but early this week the bottom hole cores proved to be red beds and blue shale. The hole will be carried to the water level should oil or gas not be developed, and one or more tests will likely be drilled on the large block of leases held by the company.

Cranfill-Reynolds Company and Louisiana Oil Refining Corporation's wildcat test on the J. W. Broom 100-acre lease, Samuel Chears Survey, diverted interest from the LaRue test early this week when cores taken in the Eagleford shale at 4430-45 feet revealed showings of black heavy oil. The two companies have about 3000 acres surrounding this Henderson County drilling block, which is known as the Pine Grove area.

Tom E. Cranfill & Gene Germany, Dallas operators, are to start operations shortly on a new test for Henderson County that has been financed in short order by selling off 28 five-acre leases surrounding the drilling site. These operators paid $100 per acre for the Clara C. Starr 183-acre farm, Guadalupe Acosta Survey, which centers on a core drilled high. The five-acre leases were disposed of at $1500 each to various companies and individuals, and the ready sale of these small tracts is due to the favorable core drill information.

Bureau of Mines Publications Available to Industry

The United States Bureau of Mines, through its Petroleum and Natural Gas Division, conducts investigations dealing with petroleum, natural gas, oil shale, their products, and safety in the petroleum industry. Reports of such investigations are made in the form of "Bulletins", "Technical Papers", "Reports of Investigations", and "Information Circulars". Subjects of great length and deserving of considerable amounts of time are presented in the form of bulletins or technical papers. These reports, due to the amount of time required in their preparation, usually are not available to the public until after the object of study has become stabilized and the information is, therefore, somewhat retrospective. For these reasons the shorter subjects are presented in "Reports of Investigations" and "Information Circulars" and in many cases various stages of the lengthier subjects are so reported in order that data may be made available at a time when it is most needed.

The Bureau is preparing a revised mailing list for distribution, without cost, of mimeographed reports dealing with petroleum, natural gas, oil shale, their products, and safety in the petroleum industry. Many of those who receive the bulletins and technical papers do not know of this mimeographed service and are not on the present mailing list for such reports. In order that members of the industry who are interested in receiving this service, circular letters are being mailed to those whose names and addresses can be obtained. In the belief that many interested persons will not be reached it is suggested that the coupon below be filled in and mailed directly to the United States Bureau of Mines, Washington, D. C.

Name.....

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Check publications desired:

—— 1. Production, transportation, and storage of petroleum, and natural gas.
—— 2. Chemistry and refining of petroleum.
—— 3. Safety in the Petroleum Industry.
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—— 5. Government Printing Office Perodical Notice (postcard lists) of Bureau of Mines publications.

Gulf Coast Field Developments

JACK LOGAN, *Staff Representative, Houston, Texas*

Humble Deep Tests Prove Disappointing

HOUSTON.—Sun Oil Company's Bender 3 still remains the only producing well on the west flank of the Humble field, although several nearby tests have already gone considerably deeper than the producer's total depth of 3903 feet.

Rio Bravo Oil Company's Fee 1, apparently well located at a point about 1250 feet southeast of the Sun Oil Company well, logged sand and shale with oil showings at 3873-3996 feet, but the sand was not considered good enough to test, and on April 29 the well was drilling shale and hard sand at 4293 feet.

Sun Oil Company's Bender 4, which is about 600 feet north and 200 feet west of No. 3, the producer, was drilling at the same time in shale at 5329 feet.

The above wells are in the town of Humble, the producer itself being in the north portion of the Bender South Addition.

Wilson & Lee during the past week abandoned their Bender 1 at 4004 feet in heaving shale. That test was on the west side of the field in Block 3, Bender Third Addition.

Continental Oil Company's Kattar 1, located in Block 1, Bender Third Addition, west side of the field, is preparing to make a test at 3500 feet, having plugged back from 5147 feet, at which horizon there was heaving shale.

Aside from the above tests, there is another well drilling on the west flank of the Humble field, Sun Oil Company's Bender 5, now making progress below 1500 feet. It is a direct west offset to Rio Bravo Oil Company's Fee 1, being therefore about 1100 feet southeast of the producer. Sun Oil Company also has a derrick up for Bender 6.

While interest has been centering largely on the above tests in the semi-proven west portion of the field, development has continued on the east, south and north flanks also, and there are 16 rigs in operation in the whole field. There was one completion the past week: The Texas Company's Landslide 271. In that well 4¾-inch screen was set at 4885 feet, and it came in flowing 750 barrels of pipe line oil, 45.6 gravity at 68 degrees temperature, on a five-eighths-inch choke.

T. P. Lee's Wheeler & Pickens 1 on the southwest side of the field has set 160 feet of 4¾-inch screen at total depth of 4183 feet, and was preparing to swab early this week.

M. La Rue, Trustee, has set casing at 3470 feet in Cicero 1 in the E. Ruhle Survey, south side of the field, and early this week was drilling out the cement plug.

P. G. Benedum's W. L. Foley 1, wildcat off the southeast flank of the dome in the J. Ryan Survey, is in sticky shale at 5150 feet.

On the north flank Sun Oil Company's River 48 is drilling gumbo at 1842 feet; and Houtex Production Company's H. Ward 1 is preparing to drill in, casing having been cemented at 4462 feet over oil sand. The Texas Company's House 24 on the north side is bailing salt water and oil at 3968 feet. The Texas Company's Koehler 14, a workover on the northeast flank, was bailing salt water and oil at 3575 feet April 28.

On the southeast flank The Texas Company's Stevenson 42 is drilling sticky shale and lime at 3519 feet; and Wheeler & Pickens 22 and Texas Pipe Line Company's Fee 1 are rigging up. Humble Oil & Refining Company's Williams 12 is drilling broken lime at 2370 feet.

The average daily production at Humble during the week ending April 26 was 19,600 barrels. That represents a slight decline. During the preceding two weeks the average was a little above 20,000 barrels daily. Humble at present ranks third among Coastal fields in daily production, with Refugio and Barbers Hill in first and second places.

Barbers Hill Wildcat Test Drilling at 6590 Feet

HOUSTON. — Yount-Lee Oil Company has passed up the oil sand which it encountered at 6530-6550 feet in Zadie Fisher 1, wildcat test on the southwest flank of Barbers Hill dome, and early this week was drilling hard sand at 6590 feet.

This well is 6400 feet south of Humphreys Corporation's Kirby 8-A, which has produced over 500,000 barrels of oil since January 4, 1930, from sand at 6397-6416 feet, and it is about mid-way between that well of the Humphreys Corporation and the nearest of the deep producers on the south flank of the dome. Yount-Lee Oil Company's test has had various good showings of oil and gas. There was one sand around 5800 feet which it is believed will prove commercially productive in the event no deeper production is found and the well is plugged back.

Humphreys Corporation's A. E. Barber F-1, 160-foot south offset to that company's Kirby 8-A, the above mentioned prolific producer, was within 100 feet of the expected producing horizon April 28, drilling sandy shale at 6298 feet.

Humphreys Corporation's Morgan 1, virtual wildcat on the north flank of the dome, located one mile from the nearest of the producing wells on the northeast side of the field, was coring sandy shale at 6225 feet on April 28. Mills Bennett Production Company's Barber 2, located 1600 feet farther west along the north flank, is still shut down, waiting on orders, at total depth of 6967 feet, with stuck drill pipe. Humphreys Corporation's Scott 2 on the north end of the field is drilling shale and lime at 4482 feet.

Mills Bennett Production Company's Barrow 7, deep well on the southwest flank of the dome, which came in over a week ago flowing 2000 barrels of oil daily at 5642 feet, extending deep production 2600 feet westward, but which flowed only 30 minutes and then sanded up, is now fishing.

In all approximately 20 rigs are in operation at Barbers Hill, with development in progress on all sides of the dome.

On the northeast flank Humphreys Corporation's Kirby C-2 has cemented casing at 3440 feet. A great deal of difficulty has been encountered in drilling this test, due to the hole deviating from the vertical. It was drilled originally to 5361 feet, was later sidetracked and drilled to 4675 feet, where drill stem was stuck, and subsequently was practically redrilled to the present depth, having been sidetracked only a few hundred feet below the surface.

Humphreys Corporation is also working over three former producing wells on the northeast flank. Cornelia Barber 1 has been sidetracked around 5051 feet; Ilfrey 2 will reset screen; and Kirby H-3 is rigging up to drill deeper.

Yount-Lee Oil Company's Phillips 3 is drilling shale and lime at 4481 feet. Sun Oil Company's Wilburn Fee 5 has an oil sand at 5246 feet; Wilburn Fee 6 is drilling sand at 4846 feet; McKinney Fee 4 is drilling sandy shale at 5179 feet. Mills Bennett Production Company's J. F. Wilburn 4 is drilling sand, with oil show, at 5178 feet. Sinclair Oil & Gas Company's Wilburn 6 is drilling sandy shale at 5060 feet; McKinney Fee 3 has

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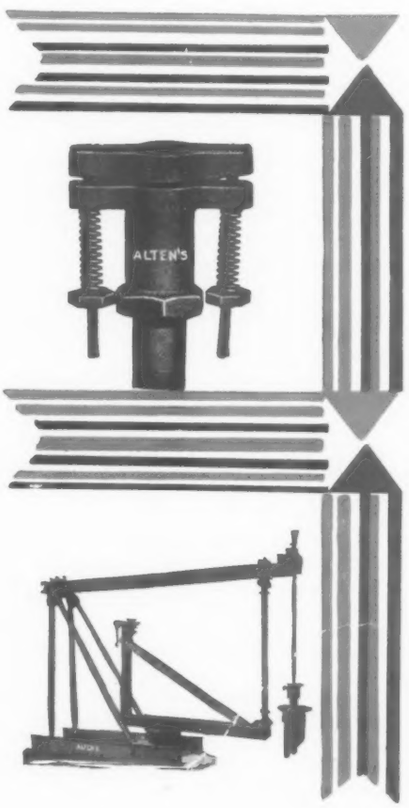

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set screen in sandy shale at total depth of 5265 feet. McAlbert Oil Company's E. F. Woodward 5 has an oil sand at 5160 feet. F. L. Thompson's Wilburn 2 is cutting liner after testing water at 4646 feet, and No. 3 is drilling shale at 4767 feet.

Barbers Hill is the second largest producing field in the Gulf Coast at present. The average daily production during the week ending April 26 was 22,200 barrels. That represented a considerable decline. For the week ending April 19 the daily average was 26,300 barrels, and for the week before that 27,000 barrels.

Complete Third Producer In Pettus Field

Houston. — Union Producing Company's Ray 7, a 600-foot southwest offset to the discovery oil well of the Pettus field, Bee County, came in flowing early this week, 6⅝-inch casing having been cemented over oil sand logged at 3941-44 feet, but no gauge of production was yet available here April 29.

At the same time Humble Oil & Refining Company's McKinney 2, located 600 feet southeast of No. 1, the discovery well, was in process of completion, total depth being 3988 feet, and five-inch liner having been set on seal, while Union Producing Company's Ray 8, a 600-foot southwest offset to McKinney 2, was reported drilling in, having cemented 6⅝-inch casing at 3964 feet over oil sand encountered at 3965-70 feet.

Morgan Oil Corporation's McKinney 1, which came in a little over a week ago as a wet gas well, and which is located three miles north of Pettus oil production, is rated as a 25,000,000-foot well.

Nearly a dozen wildcats are being drilled in the Pettus district.

Nichols Oil Corporation's Hicks 3, located one mile south of Normanna and about seven miles south of the nearest oil production, was drilling shale at 3090 feet late last week. Rowan & Tong's Massengale-Freeland 1, which is three miles west of oil production, was in shale at 3020 feet at the same time. Cosden Oil Company's McKinney 1, in the John Pace Survey, Bee County, one-half mile southeast of the Rowan & Tong test, is preparing to spud. E. S. Price et al's Laura Weiss 1, located 3½ miles southeast of the proven area, is drilling below 1000 feet. Grayburg Oil Company's Wiggans 1, about seven miles west of Pettus oil production, cored sandy shale with slight odor of gas at 3100-3105 feet, but lost seat on attempt to make drill stem test. Houston Oil Company's Portis 1 in the A. Smalley Survey, Bee County, 1½ miles southeast of the oil wells, is drilling shale at 4786 feet.

To the east in Goliad County, Humble Oil & Refining Company's Lackey & Weldon 1 in the J. Gomez Survey, approximately three miles from the oil production, was reaming April 28 to 3901 feet with 12-inch bit, and William F. Morgan's Pereira 1 in Block 14, V. Ramos Survey, was rigging up.

Expect Increase in Darst Creek Field Allowance

SEGUIN, Texas.—A substantial increase in daily production allowance for the Darst Creek field is expected to be authorized early in May by the field's proration advisory committee to forestall a collapse of the voluntary production restrictions used since January 1, 1930. Freak producers being completed from crevices on the east and west flanks of the field proper have had a disturbing influence on the conservation program, while a portion of the increased allowance is to enable Louisiana Oil Refining Corporation, Shreveport, to join the ranks of shippers serving the field. Indications are that a daily allowance of 25,000 to 30,000 barrels will be assigned the field, while during the final proration period in April the allowance was fixed at 12,698 barrels, with a few wells excluded from this quota.

Darst field's production allowance during last 15 days in April is only about six per cent of its potential, which was placed at 213,946 barrels daily on April 16 from 113 wells. This high potential is somewhat artificial as is the case with certain fields in West Texas, where the Texas Railroad Commission has jurisdiction over proration enforcement. The production quota from Darst field has not been officially increased since voluntary proration rules went into effect, and it is supposed to be limited so that Humble Pipe Line Company and the Texas Pipe Line Company shall run 5000 barrels daily each, and Magnolia Pipe Line Company is supposed to hold its runs to actual quota earned by Magnolia Petroleum Company in the field. The latter company has been unusually successful in scoring crevice wells, which are excluded from proration restrictions on the east side of the field, but not on the west side. However, this company's big producer on the west flank of the structure has not been held to its quota.

Louisiana Oil Refining Corporation is completing a 3½-mile six-inch line from Darst field to a 50-car capacity rack at Sullivan, and proposes to produce about 4500 barrels daily from properties recently acquired from the United North & South Development Company for a total consideration of $2,500,000. This oil will be used in the company's refineries at Shreveport, and an attractive freight rate has been obtained for making rail shipments.

Pinching of Magnolia Petroleum Company's M. E. Roamell 1, which is the heavy producer from crevice at 2322 feet on the west flank of the field, to less than 2500 barrels daily has caused the well to resume making clean oil. It has been making 30 per cent or more, sulphur water along with the oil, and when throttled early last week the cut oil rapidly disappeared. This record producer for the field gauged 2150 barrels during the 24-hour period ending 7 a. m. April 25. Roamell 3, located to the west, missed the crevice and also the producing horizon usually found in the field, and is to be abandoned after testing dry. It lost returns at 2862 feet, and operations were halted to cement pipe at 2833 feet with expectations of uncovering a lower crevice containing oil. Roamell 2, located southeast of the big producer, is rated good for 1000 barrels daily from Edwards lime formation at 2500-73 feet, and is rigging up to pump after swabbing 55 barrels clean oil per hour.

Louisiana Oil Refining Corporation's T. Dix 3, east offset to Magnolia Petroleum Company's record producer, was also completed during the past week, making a total of four offsets now producing, the other two being Gulf Production Company et al's Dix-McKean 1-A and Louisiana Oil Refining Corporation's T. Dix 4, both completed early last week. The new well of Louisiana Oil Refining Corporation came in flowing at the rate of 3300 barrels daily from total depth of 2577 feet.

The success of the above offsets has caused operators to start another offset campaign to the new producers, and severals wells are already making progress. Louisiana Oil Refining Corporation's T. Dix 5 is setting surface pipe, and Gulf Production Company et al's Dix-McKean 2-A is drilling below 1500 feet.

In addition to the above new producers there were three other completions at Darst Creek during the past week. Empire Gas & Fuel Company's Dowdy 4 came in for 200 barrels production at 2620 feet. Humble Oil & Refining Company finished Denman 13-A for 690 barrels initial production at 2599 feet, and The Texas Company's Dallas Wilson 7 is a 960-barrel producer at 2632 feet.

South Louisiana Test Fails

Houston.—Gulf Refining Company of Louisiana has abandoned its wildcat test, City of New Orleans et al 1, located on the Wisner dome, La Fourche Parish, Southern Louisiana. The well was dry at total depth of 6385 feet, hard sand having been logged at that depth.

Indication of a salt dome was found in that area through use of seismograph, and the above test, located approximately 2375 feet north and 1250 feet west of the southeast corner of Section 19-23s-23e, was the first drilled there. This prospect is due south of New Orleans, approximately 50 miles. It has sometimes been called the Marchand prospect. It is on the coast of the Gulf of Mexico near the mouth of Bayou La Fourche, and is a few miles east of Timbailer Bay.

"Structural Steel and Pipe Line Welding"

By O. A. TILTON

IN the past, welding was the art of the blacksmith, and was achieved partly by heating and partly by the muscular energy of the smith's arm.

In the gas torch, the first improvement, a temperature of 3200 degrees Centigrade is available, which heat can be used to bring a metal to the molten state, joining the edges of the weld. When more material is required, a filler rod may be melted in the pool by feeding it under the flame. Thus the gas torch provided a fabricating tool which has had wide use over a period of many years.

The most recent development is the metallic electric arc, which develops a temperature of 3600 degrees Centigrade, and is more concentrated than the gas torch. It is produced by connecting the positive wire from a direct current generator to the pieces of metal to be joined, and the negative wire to an electrode holder in which is placed a piece of mild steel wire through which is established an arc to the work. The instantaneous heat produced thereby melts not only the work but also the electrode wire, and the molten metal of the wire actually passes through the arc stream and strikes the work with such force that is is mixed with and becomes a part of the molten pool.

What is the strength of the welded joint is a common question. It is definitely established that a welded joint can be as strong and even stronger than the parent metal.

In the design of steel buildings the use of the electric arc was accepted rather reluctantly at first. Innumerable tests have shown the reliability of welds of this type. Figure one, shows the weld subjected to shearing stress. In such tests, plates are made heavy so that their strength does not enter into consideration, so it is certain that when failure occurs it represents the ultimate strength of the weld alone.

Of 242 tests, the tabulated results in terms of ultimate unit stress in pounds per linear inch of weld show: 10,500 pounds for one-quarter-inch fillet weld; 12,000 for five-sixteenths-inch; 12,800 for three-eighths-inch weld; 16,000 for one-half-inch weld; 20,000 for five-eighths-inch, and 24,000 for a three-quarters-inch weld. To these values can be applied whatever factor of safety desired. With this as a basis it is merely necessary to apply linear inches of weld to provide the required strength.

By 1915 builders began to apply welding to the fabrication of steel structures, and from that time on much progress has been made.

In the matter of inspection, both sight and hearing may be employed. Poor fusion may be recognized at sight. Porous welds indicate that the speed of travel was too fast. Elongated craters indicate too heavy welding current, and small shallow craters show too light a welding current. Excessive spatters indicate insufficient reactness in the welding circuit, although the weld is reliable. As for the sound of good welding, an inspector will soon learn the sound of a sharp crackling arc or the irregular sputtering and hesitation of a poor arc.

Pipe Line Welding

In pipe line welding, although strength of joints is important, the major factors are low construction costs and freedom from leaks. As for the type of weld, the engineer may specify the value of the welding current and other factors to give proper fusion or penetration.

The four types of joints are: the butt joint; the bell and spigot; the bell and spigot with the welding dam; and a modification of the butt joint in which a strip of thin metal about one-eighth-inch by three inches is placed inside each joint extending half its width into each pipe and tacked in place in one pipe before the lengths are lined up. In addition the engineer should specify the grade and size of electrode wire, and the size and type of weld.

The procedure is as follows: The welding crew is preceded by a tacking crew who tack-weld each joint. Then the welding crew, consisting of four welders for the first bead, six for the second, and two for the tie-in welds—follow the tacking crew, being distributed two men to each long length of pipe.

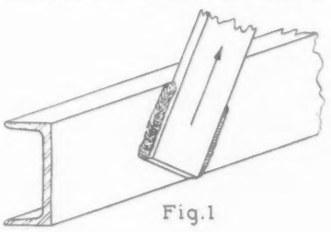


Fig.1

Fig.2

Fig.3

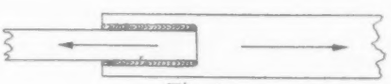


Fig.4

Fig.5

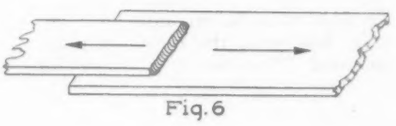


Fig.6

In laying the first bead, the operator begins at the side center and welds upward to the top center. Moving to the other side of the pipe he repeats the procedure, meeting the first bead at the top. Having completed half the first beads on all joints in their section, the pipes should be turned half around and the beads completed.

The second bead is laid continuously, turning the pipe which is held firmly by the first bead. After the second bead is completed, the long sections of pipe should be lined up on skids over the ditch, the tie-in welds made and the pipe lowered into the ditch as a continuous tube.

In selecting welding equipment, the following considerations should be made: first, the capacity for continuous hand welding at the current which will be required for the job; second, stability of the arc; third, sturdy, strong construction to withstand rough handling; fourth, light, compact arrangement; and lastly, reliability of manufacture.

In selecting the electrode wire, care should be exercised to insure the presence of analysis and uniformity; if these are correct, the chances are 10 to one that inability to produce satisfactory results is assignable to the operator or some factor within his control rather than the wire.

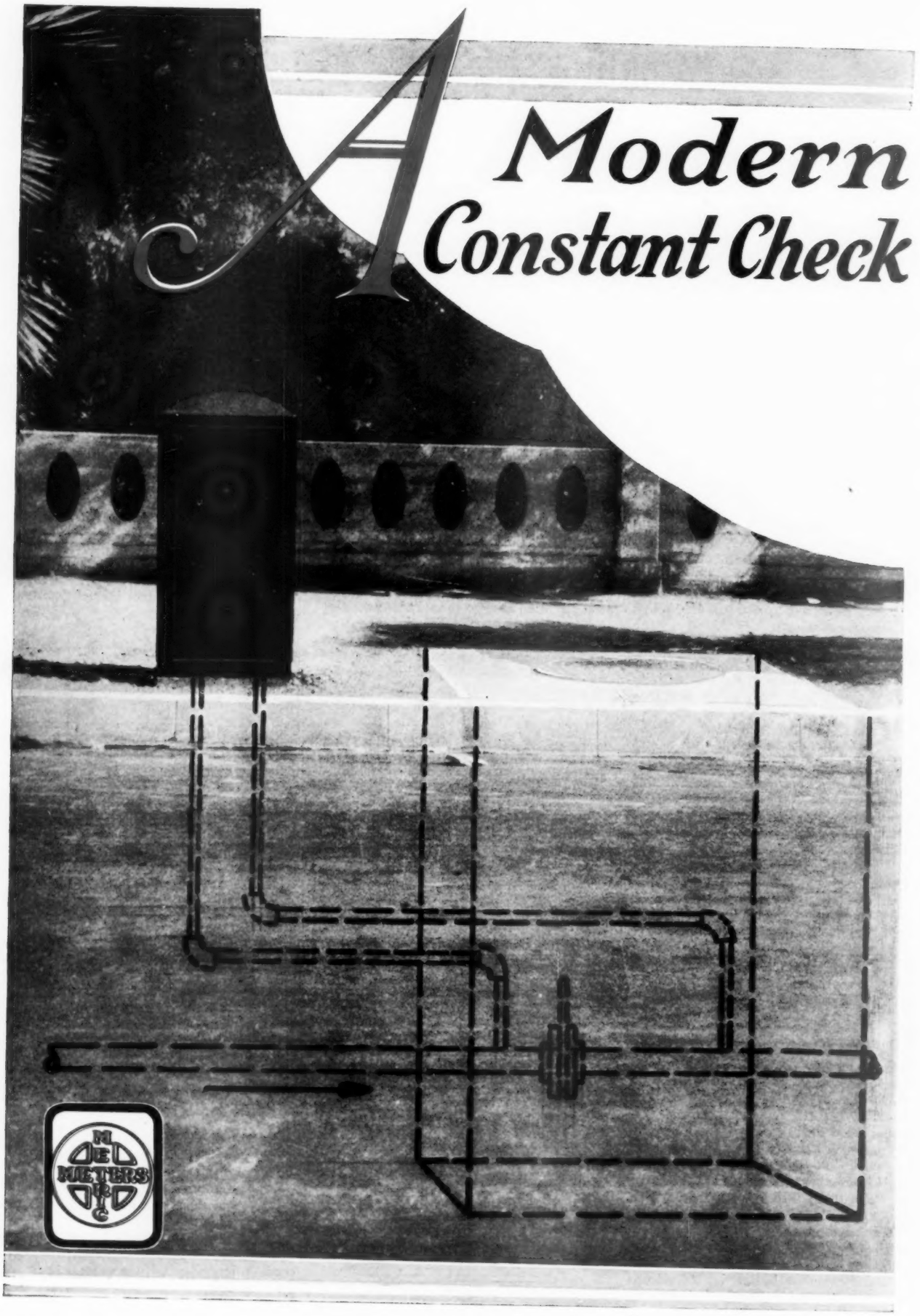
Cheap Crude Boosting Demand and Production in Texas

(Continued on page 76)

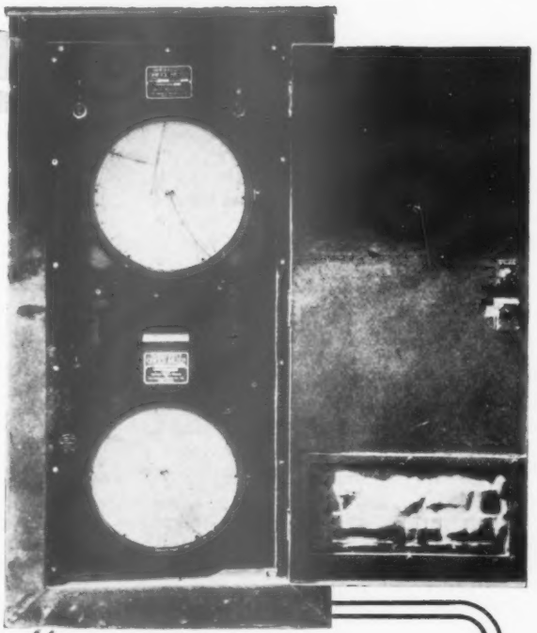
Failure of Mid-Continent refiners to maintain their quotations on gasoline offered in tank car lots after enjoying a substantial price increase before and immediately after the upward trend of crude prices on April 10 is due to excessive production of motor fuels. Another contributing factor to the sagging of gasoline prices is traceable to brokers dumping a large volume of the commodity on the market at reduced prices.

The latter group contracted for gasoline in advance of the price boost, and when shipping instructions became scarce within the past week because of domestic jobbers being heavily loaded with stock, the alternative was to shade prices. The cluttered condition of the domestic gasoline market indicates that several weeks or more will be needed to stabilize it, while in the meantime refiners are quoting from 6¾ to 7¼ cents per gallon for spot shipments of U. S. Motor gasoline.

This broad range in quotations depends on the condition of the plant owner as to stocks and finances. The general Mid-Continent crude price structure must be supported with a firm gasoline price and good demand to rightfully earn another price advance, but should gasoline prices continue to sag another small bost in crude prices may be given as a tonic to the situation.


A Modern
Constant Check
MOE METERS

System of on Leakage



The box at the curb houses a duplex installation, consisting of a 50" and a 10" Westcott Orifice Meter as used by the Los Angeles Gas and Electric Company to check leakage in each district throughout their high pressure system. Placed between curb and walk it is easy to change charts. Testing is provided for by placing taps beside the meters; and the box can be fitted with bleed pipes from the manhole close by. The manhole gives access to the orifice disc in the gas main and to meter connections. With the 10" meter for measuring low volume flow and the 50" for measuring high volume flow, a record of maximum accuracy is obtained. Such installations permit exact knowledge of leakage by districts and quick location of the fault with only a fraction of the effort involved when the whole system must be examined.

FOR minimizing leakage in high pressure distribution, the Los Angeles Gas and Electric Company has a solution. The entire piping system is divided into comparatively small districts. Then, for each of these districts, the gas is measured by a Master Metric Orifice Meter.

The desirability of saving gas through subdivision and early discovery of leakage need not be stressed. The main value of this announcement lies in the fact that a progressive Company has actually evolved a successful modern method that is suited to widespread application in high pressure distribution. And, similarly, for low pressure work, a Metric Orifice Installation, designed for an average of one inch differential loss, offers comparable advantages.

Our research service and data are always at the command of any Gas Company considering a measuring problem of this character.

Complete information is also available on Linderman Orifice Meters, Metric Indicating Flow Meters, Metric Rate Volume Controllers, and Metric Ironcase Displacement Meters.

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ERIE, PENNSYLVANIA
IRONCASE, TINNED STEEL CASE and ORIFICE METERS

AMERICAN METER COMPANY
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The World's Largest Manufacturers of Gas Meters and Allied Apparatus
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THE NATURAL GAS INDUSTRY

Phillips-Oklahoma Join in Subsidiary

Bartlesville.—Formation of the Philokla Gas Company has been announced by Phillips Petroleum Company, which has joined with Oklahoma Natural Gas Corporation in the venture. A statement of the purposes of the concern was given as follows:

"The new company will have as its purpose the compressing of natural gas from the Oklahoma City field, after the gas has passed through the natural gasoline plants of Phillips Petroleum Company. The compression plant will have capacity of 25,000,000 cubic feet daily.

"After the gasoline has been extracted, the gas will go to the compression plant of Philokla Gas Company, where the pressure will be increased. The repressured gas then will be marketed by Oklahoma Natural Gas Corporation, going either into the mains for retail distribution or to the producers in the field to be used for lifting oil, when rock pressure has been reduced to a point where the wells will no longer flow."

Carbon Black Production Is Cut 25 Per Cent.

Fort Worth, Texas.—Carbon black manufacturers in the Southwest are striving to curtail the rapidly mounting stocks of their by-product from natural gas by suspending operations on a number of plants, and voluntary reduce production about 25 per cent. The carbon black market has become literally saturated in recent months, resulting in prices taking a sharp decline, while plant owners are forced to spend large sums for warehouses because of the surplus supply. Record production of this commodity and decreased takings by the rubber tire and other industrial consumers of the product are the principal factors causing the adverse market conditions.

The over-production of carbon black is largely due to the rapid growth of the industry in the Panhandle and other sections of Texas, which is credited by the U. S. Bureau of Mines with having produced 228,183,000 pounds in 1929, as compared to an output of 100,828,000 pounds in 1928. Texas produced slightly more than 62 per cent of the total of 366,442,000 pounds credited to the United States during 1929.

Almost unanimous support is being given by carbon black manufacturers in Texas, Louisiana and Oklahoma to the movement of reducing production, and if necessary a cut of more than 25 per cent in output is contemplated. In the Texas Panhandle a number of plants are unable to erect warehouses to keep pace with the mounting stocks. Plants going on the inactive list, and those adopting the voluntary cut in production are endeavoring to dispose of the gas at reduced prices to natural gas lines, but are meeting with comparatively little success.

Kettleman Hills Gas Line Nearing Completion

San Francisco.—Standard Oil Company and Pacific Gas and Electric Company will soon complete a 200-mile, 26-inch natural gas line from Kettleman Hills to Richmond and the San Francisco Bay district, the new line to have an ultimate capacity of nearly 200,000,000 cubic feet daily. Both companies originally planned large lines but through a consolidation were able to save about $8,000,000 in construction costs.

Los Angeles.—Possibility of a smaller future gas supply in the Los Angeles basin and the remoteness of the Kettleman Hills field have temporarily sidetracked plans for furnishing San Diego with natural gas. Original plans for serving this southern city with gas were made during the height of production at Santa Fe Springs.

San Felipe Test Blows Out

Houston.—Kirby Petroleum Company's Davis 2, wildcat test located on the south side of San Felipe dome in the William Cooper Survey, Waller County, blew out late last week from total depth of 3000 feet, and began flowing warm fresh water at the estimated rate of 25,000 barrels daily. The well later bridged over, and at last reports a blowout preventer was being installed.

This well is 300 feet south of Kirby Petroleum Company's Davis 1, and it is reported to be 60 feet lower on structure than No. 1. That former test on the lease blew out while drilling at 2940 feet, causing a crater and the loss of the test. That blowout was believed to be around the 12½-inch casing, which was cemented at 850 feet.

One other test is being drilled at present on San Felipe dome. It is Empire Gas & Fuel Company's J. T. Boyd 1, located on the west side of the dome in the S. F. Austin Survey, Austin County. Late last week it was drilling sand rock at 3610 feet.

Aside from the two wells now drilling, there have been five tests put down at San Felipe since the discovery of a salt dome there in 1927 by a seismograph party of Gulf Production Company, but no commercial oil production has yet been developed, although the presence of the cap rock was verified in the first well drilled, and several fair showings of oil have been obtained.

Start Work on 300-Mile Gas Line in New Mexico

Dallas, Texas.—Pipe has been purchased by Southern Union Gas Company to start construction work promptly on approximately 300 miles of natural gas lines, varying from 12 to six-inch, to transport gas from the Ute and Bloomfield fields in Northwestern New Mexico to Albuquerque, Santa Fe and other points in northern and central portions of the state. This project is expected to involve an investment of about $5,000,000, and is scheduled to be completed by October 10, 1930. Headquarters of the company is in Dallas, and Clint W. Murchison is chairman of the board of directors and actively in charge of operations. Other natural gas units are being operated by the company in Texas, Arkansas, Oklahoma and in Eastern New Mexico.

All construction work will be performed by crews employed by the company, with M. Ulmer, Dallas, superintendent in charge. Additional gas welders are being engaged to expedite completion of the line.

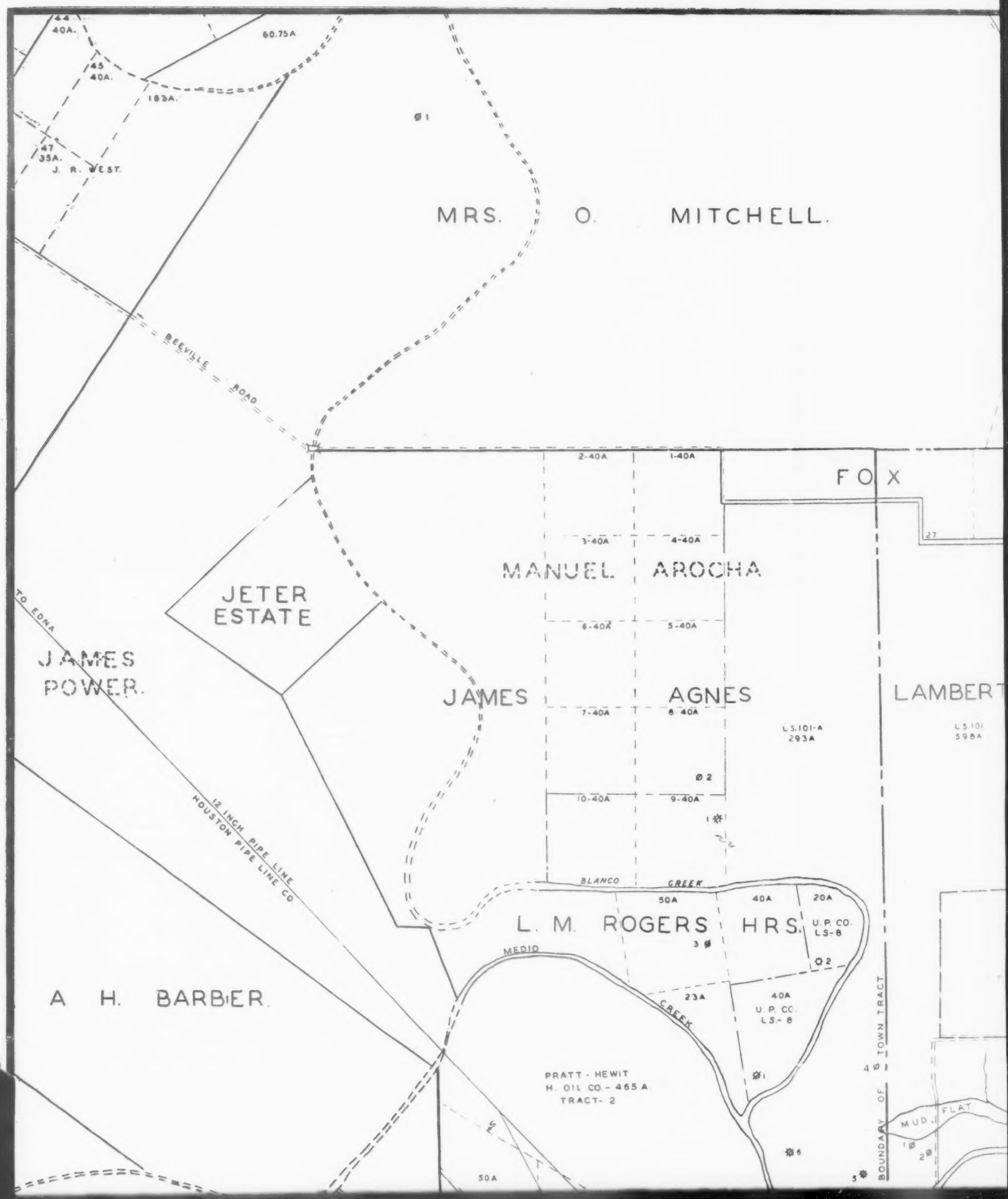
Contracts have been made for an adequate gas supply from the Ute dome, located on the New Mexico-Colorado line, and the Bloomfield field. It is planned to handle about 16,000,000 cubic feet daily through the trunk lines, without the aid of booster stations, but the latter may be added later.

Construction work will commence in the Ute field, with about 25 miles of eight-inch pipe extending to the Bloomfield area. About 82 miles of 10-inch pipe will be used between Bloomfield and Cabezon, and 56 miles of 12-inch pipe from the latter point to Albuquerque. A 20-mile six-inch line will extend south from Albuquerque to Belen, while 54 miles of eight-inch pipe will be needed in building from Albuquerque to Santa Fe, with a 60-mile six-inch extension line from the latter city to Las Vegas.

New Mexico Gas Company, a subsidiary of Southern Union Gas Company, recently completed construction work on 60 miles of eight-inch gas welded line from Hereford, Texas, to Clovis, New Mexico, with an extension line, consisting of 15 miles of six-inch pipe, from the latter city to Portales, New Mexico. Construction work is to commence early in May on 60 miles of six-inch pipe to extend from Clovis to Tucumcari.

Southern Union Gas Company has expanded its Raccoon Bend gas unit in Texas by laying 20 miles of 5½-inch pipe from Hempstead to Navasota, and 35 miles of similar sized pipe from Bellville to Eagle Lake and Columbus. These two lines are completed, but will not be put in operation until May 3.

Legal Deposit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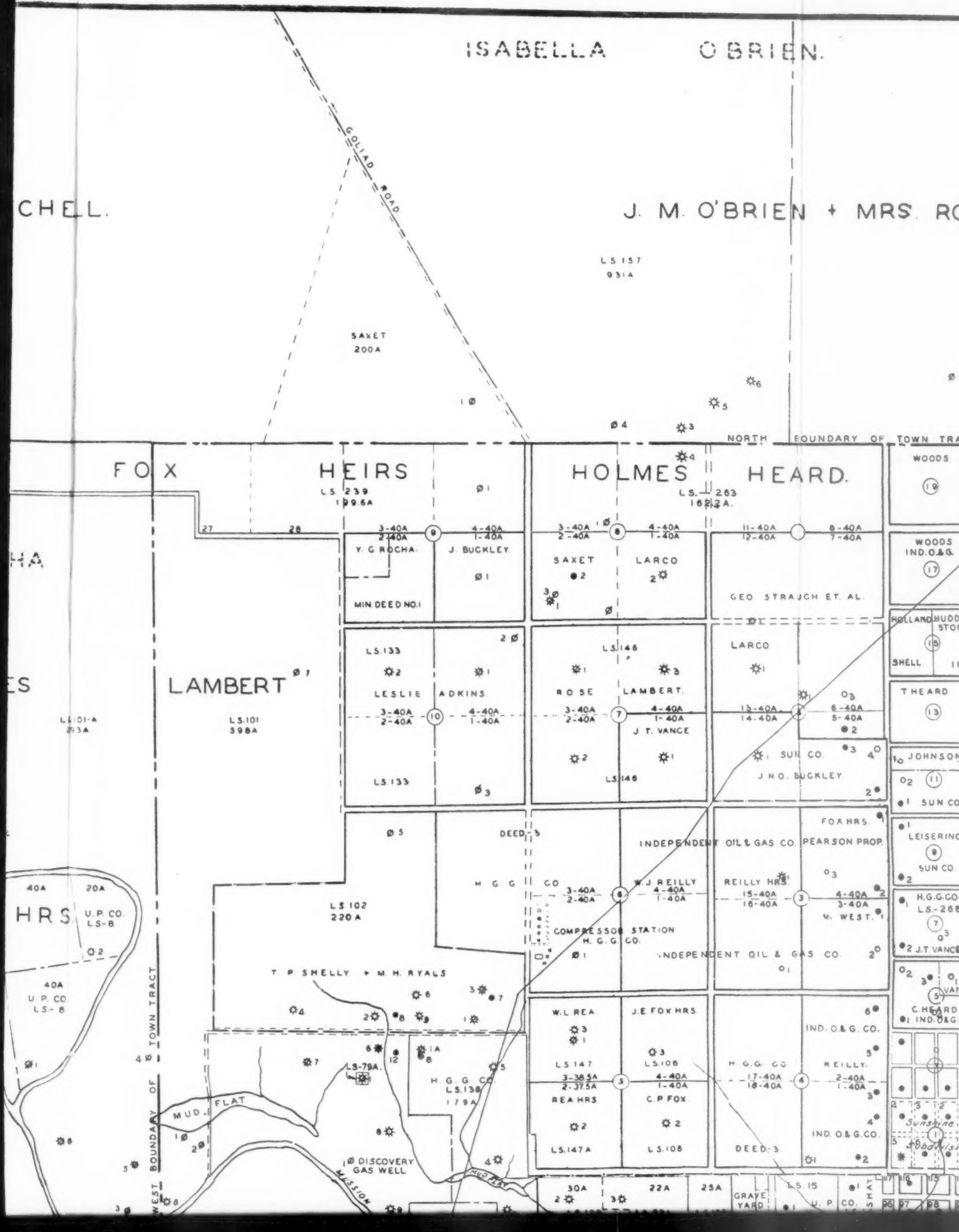
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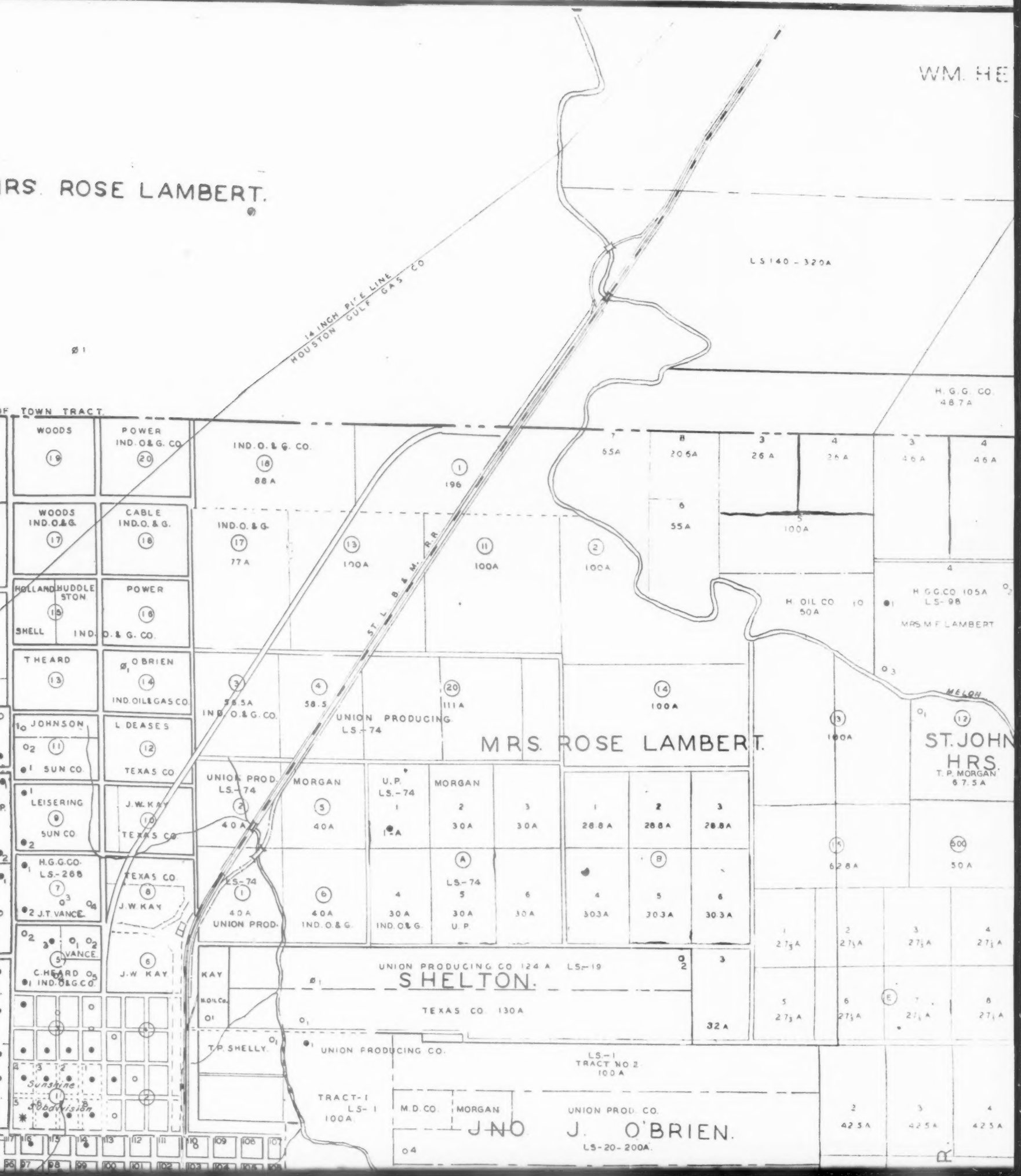
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(3) 58.5A IND. O. & G. CO.
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MRS. ROSE LAMBERT.
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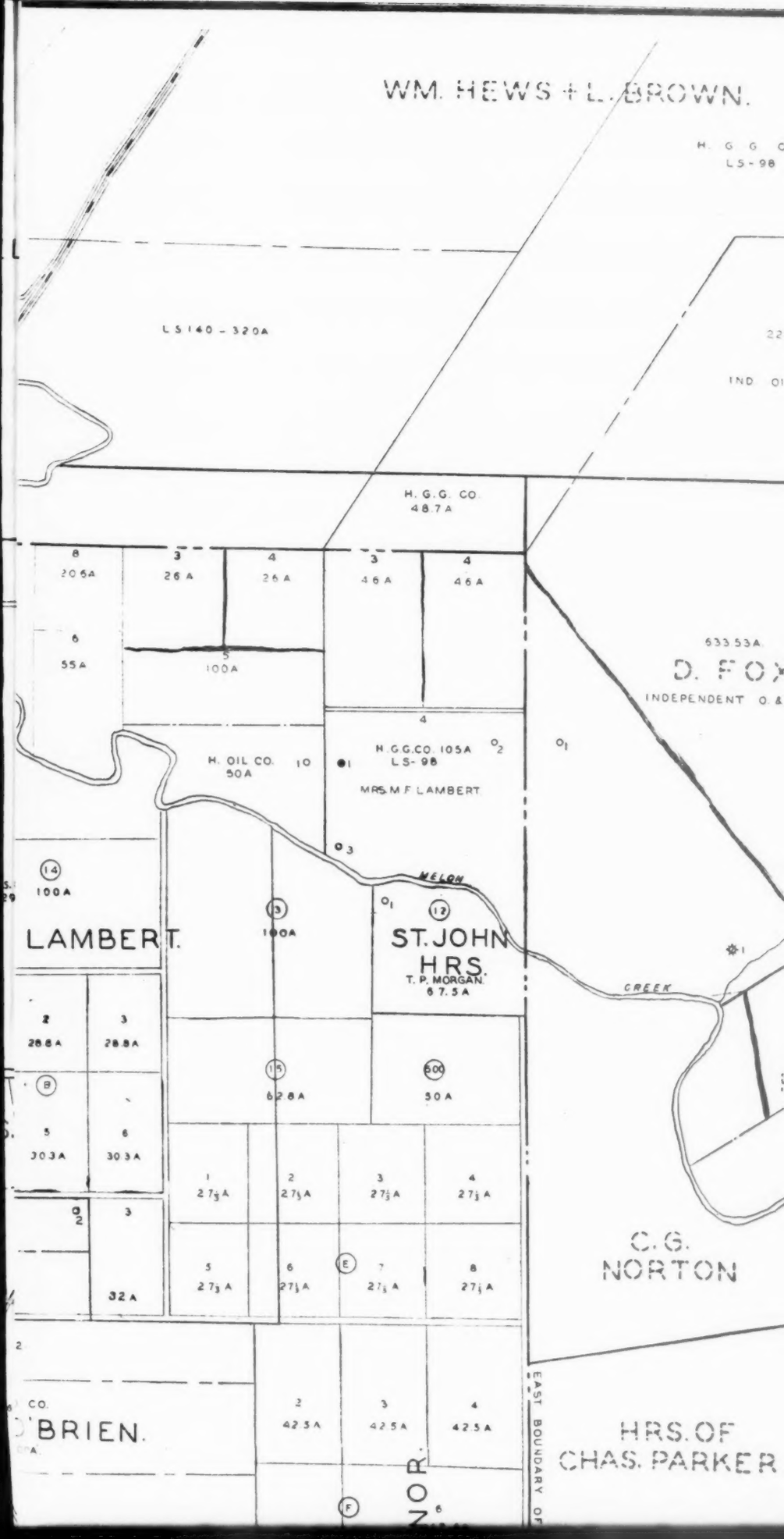
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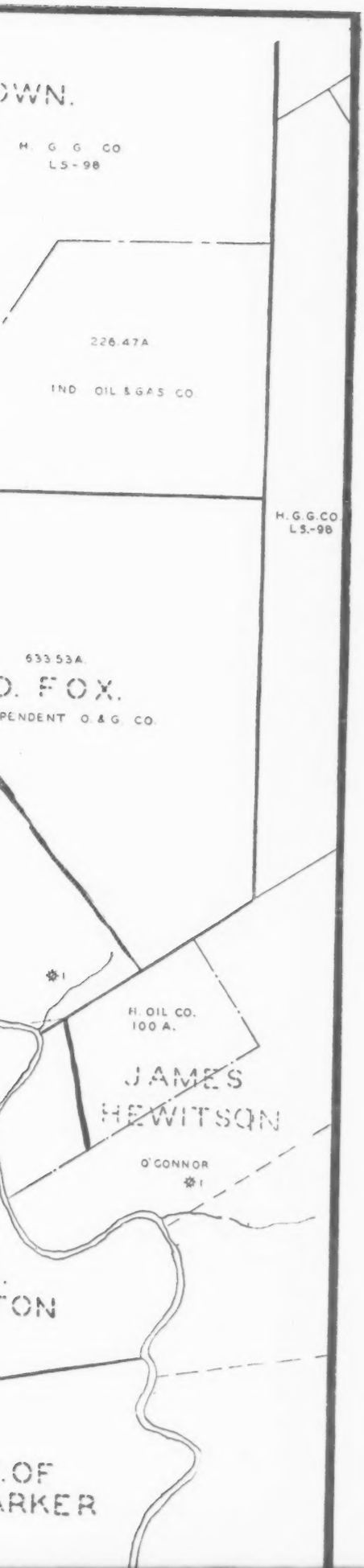
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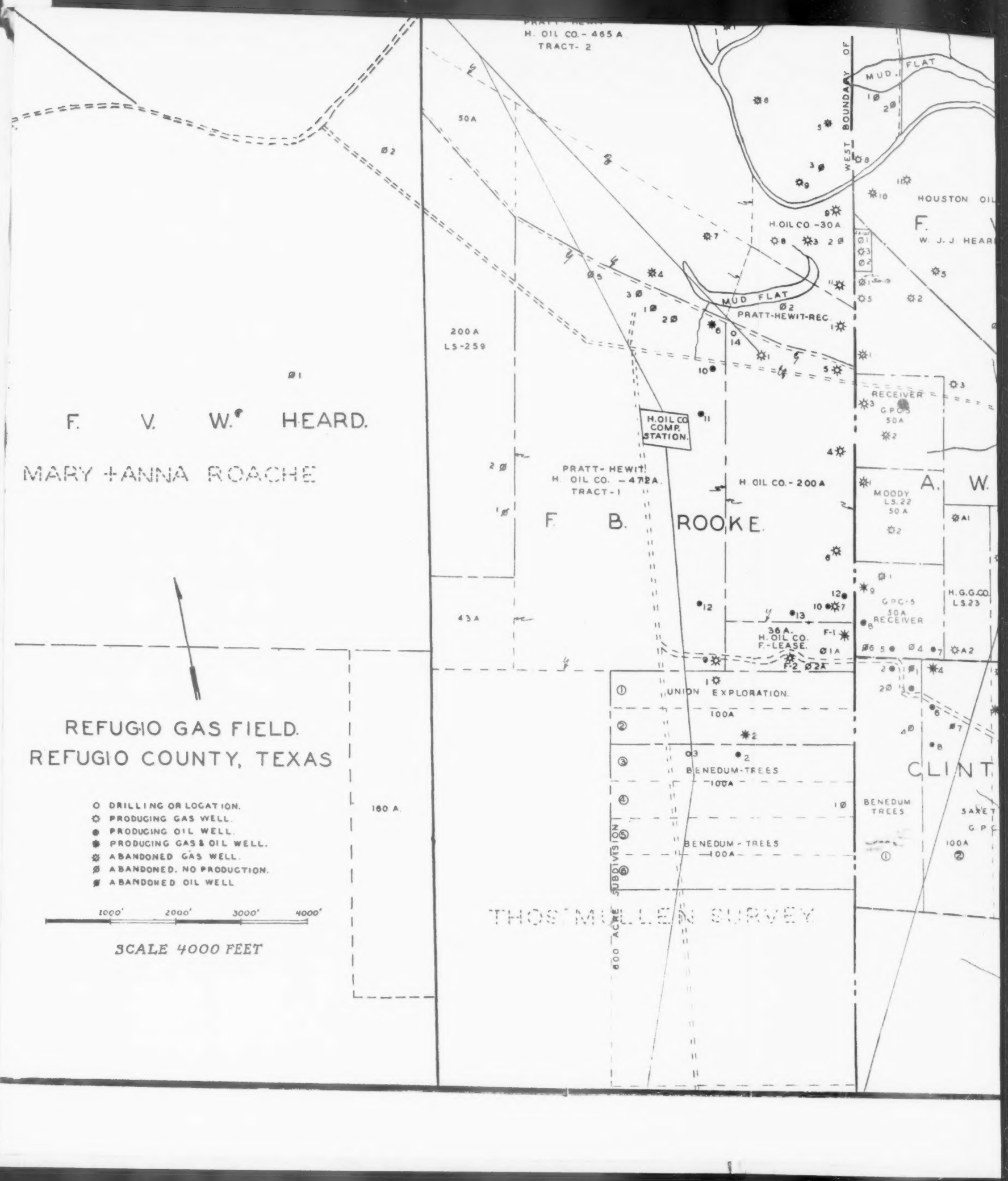
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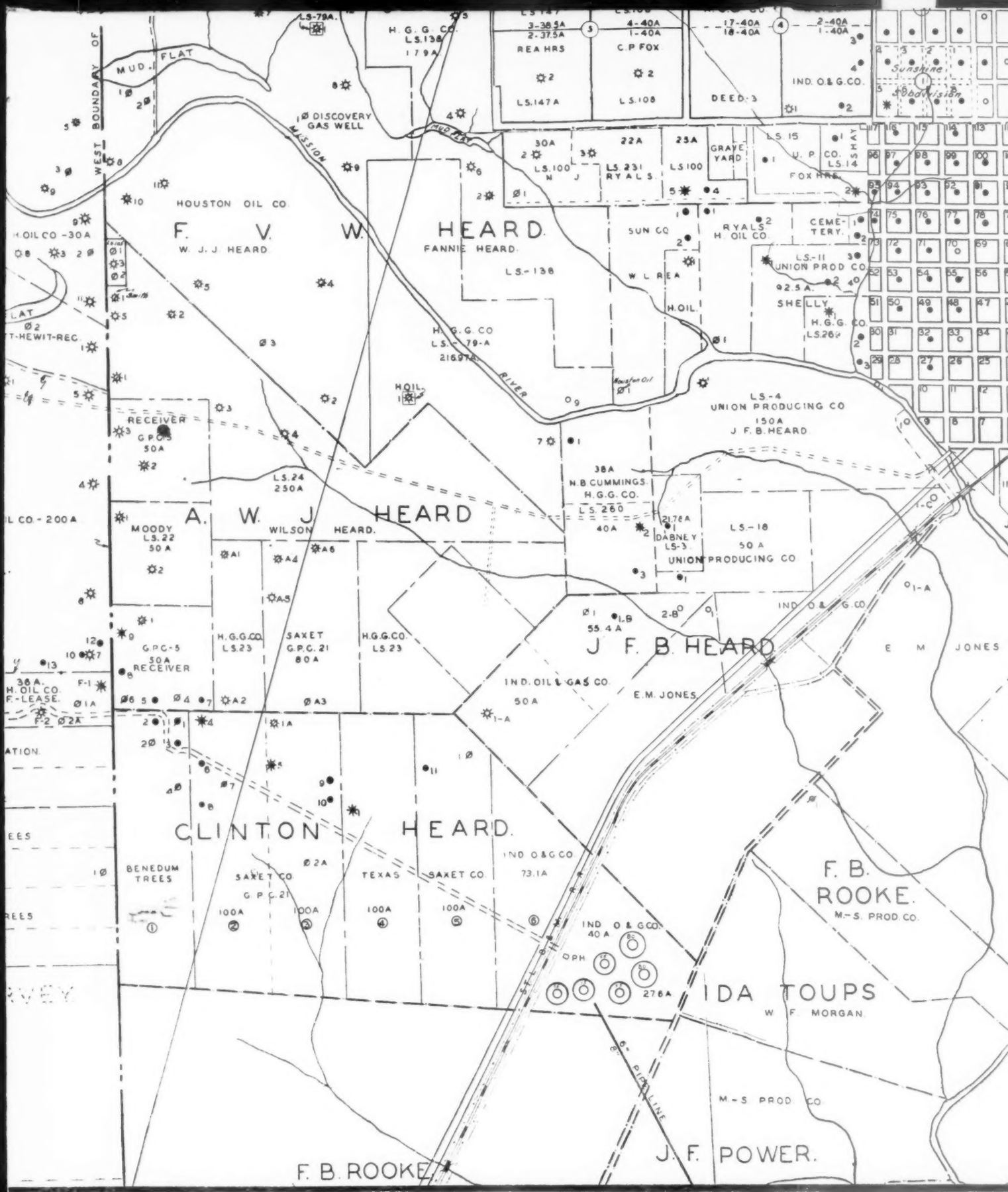
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Sunshine Subdivision
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WILSON HEARD.
MOODY LS.22 50 A
H.G.G.CO LS.23
SAXET G.P.C. 21 80A
H.G.G.CO LS.23
G.P.C-5 50A RECEIVER
38 A. H. OIL CO. F.-LEASE
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E M JONES
IND. OIL & GAS CO. 50A
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SAXET CO. G P C-21
TEXAS SAXET CO.
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8" PIPE LINE
M-S PROD CO
J. F. POWER.
F. B. ROOKE

T.P. SHELLY

UNION PRODUCING CO.

LS.-1
TRACT NO 2
100 A

TRACT-1
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100A

M.D.CO.

MORGAN

UNION PROD. CO.

JNO J. O'BRIEN.
LS-20-200A.

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M.

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U.P. CO.
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RYALS.
SAXET CO.

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RYALS.
PEARSON PROP.

DISTANCE FROM CENTER OF PUBLIC SQUARE TO ROCK MONUMENT = 5,000 VS = 13,889 FT

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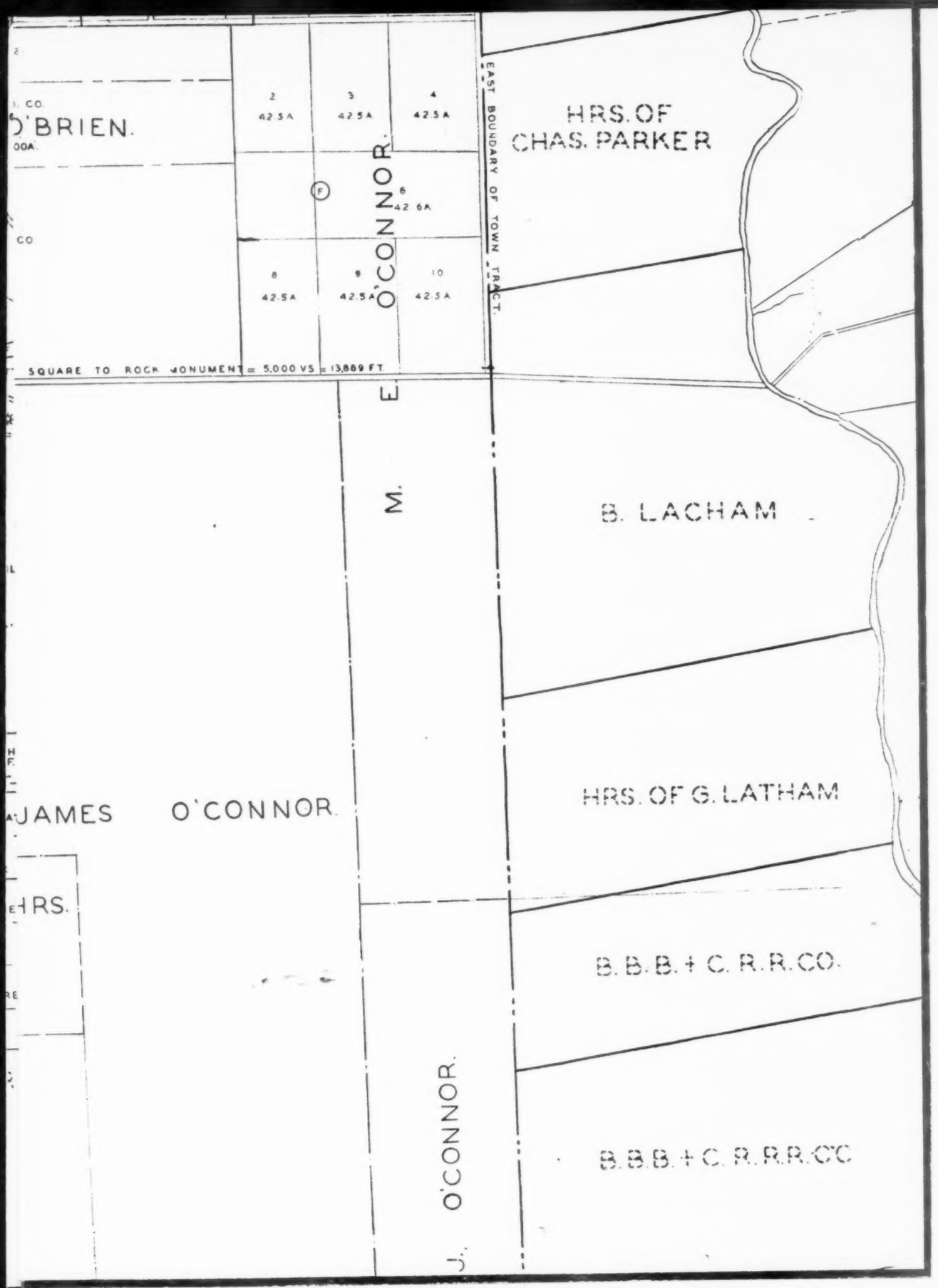
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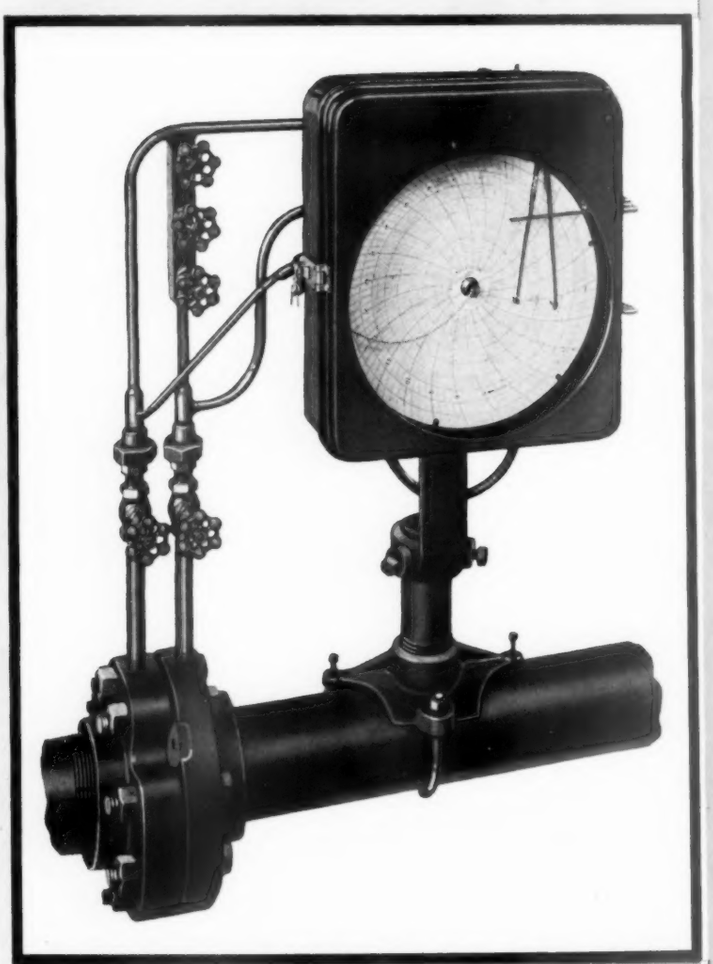

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News From California Fields

BRAD MILLS, *Staff Representative, Los Angeles, California*

Reduced Refinery Runs Complicate Situation

LOS ANGELES.—Dissatisfaction over failure to reduce California's crude output to 603,000 barrels, a strong sentiment toward a plan to bring production down to 550,000 barrels, appointment of a committee of eleven operators and an economist to determine the proper level for the state, offer of Standard Oil Company of California to purchase gasoline at a posted price at San Pedro and lack of favorable developments affecting enforcement of the gas saving injunction at Santa Fe Springs combined to fill the past week with important events which may eventually have an important bearing upon the final outcome of the present curtailment program. Although a wide range of subjects was covered, all angles of the situation are so interlocked that the industry has been attempting to coordinate the different units and treat them all as one big problem.

Reduction of production from above 800,000 to around 630,000 barrels has not been accompanied by the improvement anticipated. Stocks are not being drawn on appreciably and it has developed that the original figure of 610,000 barrels daily of allowable production will not bring about the much desired reduction in stocks. Refinery demands have been lowered until the sharp reduction of nearly 200,000 barrels during the past seven months has not necessitated inroads into the record stocks accumulated during 18 months of overproduction.

The state's hands remain tied at Santa Fe Springs, where an injunction and an alternative injunction have complicated matters. The original restraining order may be considered in effect, except in the case of the Wilshire Group, but the state is puzzled as to which course to pursue. The District Court of Appeals has granted the Wilshire Group a 10-day extension, this to be followed by a five-day extension on the state's part, before further evidence will be heard. Twin Bell Syndicate and Star Petroleum Corporation have applied to the state supreme court for a writ of supersedeas to prevent enforcement of the original injunction.

At a meeting of the general committee and a few independent operators, held early in the week, the opinions of several leading executives were made public. The meeting was called by Herbert R. Macmillan for the primary purpose of considering a reduction of state production to 550,000 barrels and for the secondary purpose of devising means of settling the gasoline war which has raged for two months in Southern California. Macmillan told the committee that the low retail price of gasoline had been the direct cause of shutdowns in small refineries and the laying off of a large number of workers. He also emphasized the need of a further reduction in crude oil production as a safeguard against continuation of distribution of gasoline at a price below actual cost.

There was a sharp difference in opinions concerning both points involved, a few members insisting that production should first be brought down to 603,000 barrels before setting a much lower goal. Paul N. Boggs, chairman of the General

Average Well Production Down At Santa Fe Springs

LOS ANGELES.—Average production of all deep zone wells at Santa Fe Springs averaged about 400 barrels during the past week. This figure is considerably below the average potential yield of this group and represents a slight decrease from the previous week.

Production of a group of wells was considerably increased through the use of larger beans, but a check of the natural decline showed the downward tendency to have more than offset this artificial increase.

Changing of the tubing to obtain a better gas-oil ratio has become a common practice. Lowering of tubing has resulted beneficially in many instances but a smaller production of both gas and oil has not been unusual.

Completions were poor, the seven new wells accounting for a total of only 2500 barrels. The best well of the week was The Texas Company's Foix 5, a 1100-barrel completion in the O'Connell zone at 7100 feet. This well was drilled to 7825 feet but plugged back for a test in the shallower sand. There were no other important completions in any sand.

Deep tests are holding the chief interest, with a few wells trying for porduction in the Hathaway zone, which was a failure in the discovery well. George F. Getty lost a core barrel in Baker 36, drilled to 8962 feet and considered one of the important deep tests now active. The Texas Company is swabbing for production in Patterson 10, after cleaning out to bottom at 9070 feet. A string of 5-inch casing was cemented at 8280 feet. Wilshire Oil Company apparently failed to obtain a water shutoff in Baker 4-A, salt water below the 6⅝-inch casing at 8275 feet indicating a faulty cementing job. This well was drilled to 8800 feet. General Petroleum Corporation will drill Jalk 115 to the Hathaway zone, the test now coring ahead at 8165 feet. Belief that the Hathaway zone will be a commercial producer near the center of the field is still held by some geologists.

Reworking of about 20 wells has increased the active tests to 76, with another downward trend possible unless leading companies continue to rework producers that cease to flow.

The Nordstrum zone is producing 7000 barrels from 12 wells, the Buckbee zone 12,500 barrels from 23 wells, the O'Connell zone 38,000 barrels from 74 wells, the Clarke zone 60,000 barrels from 182 wells and all shallow zones 11,300 barrels from 90 wells. The Buckbee and Nordstrum zones have a higher average yield per well than the Clarke and O'Connell zones, this fact being accounted for by the better gas-oil ratio and fewer number of wells in the zones developed first.

Committee, insisted that the meeting should not use price-fixing of gasoline as one of its arguments and asked for a clearer statement concerning the proposed procedure.

L. P. St. Clair, executive vice-president of Union Oil Company, addressed the meeting in a rather frank manner after he had made it plain that he was not sure of the purpose of the gathering. He set forth what he considered the principal causes for conditions in California and urged a sharp reduction in stocks by a further cut in crude production. St. Clair contended that it would be just as logical to "throw the state wide open" as to continue to produce around 610,000 barrels, an output which merely balances supply with demand. He expressed the belief that the situation would cure itself in 30 days if production jumped back to above 800,000 barrels, but it would take a heavy toll in doing so and such a condition should be avoided. At the end of the year, stocks will be as high as at present and the cost of carrying this surplus will have greatly increased if the state's output is not sharply reduced to consume present stocks, St. Clair emphasized. The fiery Union Oil Company executive made a motion to have the chairman of the general committee appoint a committee of 11 representative operators and an independent economist to determine the proper daily average for the state. The motion was carried unanimously and some figure considerably below 600,000 barrels probably will be used as a basis for the remainder of the year.

W. E. Dunlap, chairman of the fact-finding committee, did not favor a plan for reducing production to 550,000 barrels, basing his contention on the theory that a hurdle race can not be won by jumping the last bar before other bars have been cleared. He cited that it had not been possible to bring production down to the original levels and that shooting at a still lower total ahead of partial failure of the original program, was premature. Dunlap released figures which disclosed an average of about 21,500 barrels during the first three weeks of April and revealed that during only two days in March did production fall below the objective level.

A. T. Jergins, a leading independent operator at Long Beach, released several bombshells during the meeting. He insisted that if the price of oil could be cut and "cut a plenty" the recalcitrant operators at Santa Fe Springs, or in any other offending field, would cooperate fully.

Curtailment Orders Ignored

Paul Grimm, umpire for Santa Fe Springs, was asked to give reasons for failure of the field to meet the allowable set by the committees. He stated that due to the absence of a binding agreement or contract certain Santa Fe Springs operators had ignored orders issued by his office. Grimm said that if it were possible to get a signed order operators would strive to stay within their allowables in many obstinate cases. It was also brought out that failure of the gas law had led to an almost wide-open flow of a few companies in the field. Grimm contended that in many fields operators do not seem to understand the reasons for curtailment and insist that they do not know what is expected of them.

The Wilshire Group and George F. Getty were pointed out as the chief offenders at Santa Fe Springs. Heretofore, considerable hedging has been in evidence when these companies were mentioned, but they came in for a sound rebuke. It was shown that these companies are producing nearly twice as much oil as they are allowed and have ignored requests to cooperate with other companies.

Evidence of unrest among major operators who have been carrying overproduction of certain operators was observed and this dissension could easily lead to maximum production at Santa Fe Springs. Even a larger production in other critical fields is considered possible if better cooperation is not forthcoming.

The committee of eleven appointed by Paul Boggs includes: T. E. Swigart, Shell Oil Company; H. C. Dunbar, Bell View Oil Company; A. S. Hayes, General Petroleum Corporation; S. B. Mosher, Signal Oil & Gas Company; C. R. McCullon, Pacific Western Oil Company; Ralph Lloyd, Ventura landowner; L. M. Lockhart, Rio Grande Oil Company; W. E. Dunlap, Richfield Oil Company; Allen Jergins, A. T. Jergins Syndicate; Earl W. Wagy, Standard Oil Company, and R. E. Haylet, Union Oil Company. This committee will meet next week and appoint an economist to assist in determining the state's needs.

Kettleman Hills Active

Interest in Kettleman Hills development has again been revived and it has become apparent that the long-expected offsetting campaign may be expected before the expiration of the present agreement expiring July 1, 1931. Dr. George Otis Smith, chief of the U. S. Geological survey, will make another trip to California in the interest of the government and to help formulate a modified plan of development for the North Dome.

The offer of Standard Oil Company of California to purchase gasoline delivered at San Pedro, California, is regarded as one of the most important developments of the year. In announcing the innovation, the company stated that it would buy U. S. motor gasoline in cargo lots, delivered to ship's rail, at 6½ cents per gallon, this price for delivery within 60 days, subject to change without notice. Prices for higher grades of gasoline in similar quantities at the same point of delivery will be quoted by the company upon application.

Establishment of a posted price for purchase of gasoline is not only a new policy in California but marks the inauguration of a practice which probably will be adopted in other sections. This published wholesale purchase price will have an immediate favorable effect on the gasoline market. Standard Oil Company has announced that in the past, distress gasoline has been sold at prices actually below the cost of replacement and that the posting of a regular schedule should be of considerable importance in establishing essential values and in maintaining orderly market conditions.

The gasoline market is not ordinarily discussed in connection with the producing branch of the industry, but conditions in California have become so sensitive that crude production and distribution of gasoline occupy opposite ends of the see-saw board and are dependent upon each other for the proper balance.

Standing between crude production and the gasoline market is the refinery situation. All three angles have become susceptible to the source of past troubles—overproduction. Runs to still have been reduced in accordance with production, now being low enough to prevent heavy additions to gasoline stocks.

Movement of California products to the Atlantic seaboard and certain foreign markets has been watched closely and failure of the gasoline and crude market to improve as rapidly as crude production and refinery runs have been reduced may eventually be attributed to a smaller demand from outside consumers. Fuel oil shipments through the Panama Canal gained during March but gasoline shipments were somewhat lower than early estimates indicated. Curtailment has made both the refining and marketing branches of the industry dependent upon production, with the export angle closely paralleling domestic conditions.

Kettleman Hill Leases Sold

San Francisco.—Honolulu Consolidated Oil Corporation has purchased holdings of the Kettleman Oil Corporation, the leases consisting of about 1700 acres in the Kettleman Hills field. The purchase price was not made public. The leases acquired probably will be operated by Pacific Western Oil Company.

Interest in North Dome Revived

Coalinga, California.—Completion a week ago of Standard Oil Company's No. 38 as a 2100-barrel producer gives the northern portion of the North Dome at Kettleman Hills a better appearance and again revives interest in the drilling campaign which was planned immediately following completion of Petroleum Securities Company's Felix 1 a few months ago. With an initial production considerably greater than Felix 1, which offsets it, the newest completion will be allowed to flow as a protection to the company's lease. Standard Oil Company now has a production of about 9000 barrels of 60 gravity crude from three wells. No. 38 would be shut in immediately if the offsetting companies would agree to shut in wells on top of the sand, but such an agreement is doubtful.

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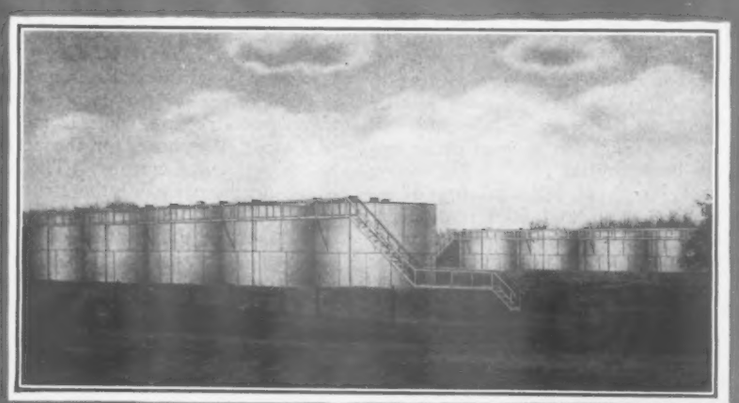

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placed at a distinct disadvantage, due to the completion of Petroleum Securities Company's Felix 1 and the more recent completion of Standard Oil Company's No. 38, both offsets to its proposed well which was not allowed by the Department of the Interior. Both of these producing wells will draw from approximately the same territory as would the Continental Oil Company's proposed well.

Revival of Pier Building Follows Slump at Elwood

Santa Barbara, California.—Elwood Exploration Company has completed Permit 90-2, its second tideland producer, as a 3400-barrel producer at 3495 feet, maintaining the perfect record of completions drilled in the Pacific Ocean as offets to mainland producers at Elwood. Although located slightly lower on structure than more recent tideland completions, the well indicates that ocean permits in this part of the field will be productive a considerable distance from shore.

A revival of pier building, following a slump caused by curtailment, has again placed Elwood in a very active class and as conditions improve the field will be developed even more rapidly. The handicap and expense of building piers in the ocean are easily offset by initial yields up to 10,000 barrels from the remarkably shallow depth of 3500 feet.

Signal Oil and Gas Company has completed the longest pier, the structure extending more than 1400 feet into the ocean. Pacific Western Oil Company has completed two piers only slightly shorter, with Barnsdall Oil Company and several other operators gradually extending their structure farther out into the ocean.

North Beldridge Test Is Disappointing

Taft, California.—The long expected production test of Belridge Oil Company's Fee 15, an important deep well in the North Belridge field, was made this week and proved extremely disappointing during the first day following swabbing of the 5088-foot hole. The flow of mud and sand was accompanied by about 2,000,000 cubic feet of gas. After 24 hours, the well started making a small quantity of very light oil and showed promise of increasing to a much larger production. The well was finished in the Temblor sand, the producing formation at Kettleman Hills, and has been regarded for months as the most important test in California. A very heavy gas pressure was developed and cores revealed oil comparable to that produced at Kettleman Hills. Completion of a large well will seriously endanger curtailment in California unless production is shut in. The acreage is held by a few large companies, but offsetting will result if the discovery well is allowed to produce.

Huntington Beach Deep Test of Real Importance

Los Angeles.—Barnsdall Oil Company has cemented a string of 8⅝-inch casing at 5530 feet in Syndicate 1, a deep test in the Huntington Beach field, after drilling through a favorable formation between the shutoff and bottom at 5596 feet. This well is one of the most important ever drilled in the field and has been the direct cause of considerable under-cover leasing activity. Huntington Beach is not considered as promising for deep production as some of the more compact fields to the northeast along the Newport-Beverly fault line, but parts of the structure could yield oil from deeper sands, according to geologists. Plans for deeper drilling have been made in the past, but overproduction in other Los Angeles basin fields and efforts of curtailment leaders to prevent another large source of oil have been effective in controlling activity.

The Vaqueros Major Oil Company has acquired a tideland permit west of the field and will drill on the theory that the structure extends to the ocean at a point about a mile northwest of the city limits. This is one of the few permits—if not the only one—granted in this district and the company has announced that it will build a pier to make the test.

Deeper Drilling At Potrero

Los Angeles.—Sunset Pacific Oil Company's Community 3, completed 10 days ago as an 1800-barrel well, is still flowing 1600 barrels and apparently has opened up a much better sand in the Potrero field than had been found during the several years of activity. Located in the Inglewood townlot district, the completion is already being reflected in plans for deeper drilling in many other idle tests. Sunset Pacific Oil Company is deepening a second well to the new sand and several other operators have similar plans. Previously the thin layers of oil sand found between 3800 feet and 5000 feet have failed to produce consistently, production dropping sharply in every case.

Tideland Activity At Rincon

Ventura, California.—Chanslor-Canfield Midway Oil Company is making a production test in Hobson A-2, located about three miles from present production in the Rincon field, the well having been drilled to 6855 feet and with a string of 8⅝-inch casing cemented at 6640 feet. The formation tested ran about 50 per cent oil sand.

General Petroleum Corporation will drill deeper in Ferguson 2, a tideland test in the ocean, despite a production of about 1200 barrels from 100 feet of oil sand between 3340 feet and 3455 feet, the present bottom. This well is located on the end of an 1800-foot pier and has already been responsible for two locations on offsetting tideland permits.

Honolulu Consolidated Oil Company is preparing to drill on a permit, while Richfield Oil Company has tentatively located a well in the ocean, state tideland permits lining the beach here as at Elwood and other districts along the coast.

Point Conception Test Fails

Santa Barbara, California.—Failure of a production test in Standard Oil Company's Gerber 1, located near Point Concepcion, has temporarily eliminated this area from the list of prospective fields. The well is being drilled deeper from the former depth of 4371 feet.

Delay Deepest Well Test

Taft, California.—Standard Oil Company has suspended operations in Mascot 1, world's deepest well, at 9629 feet and probably will not make a test before 1931. A string of 5¾-inch casing was cemented at 9302 feet but no effort was made to make a production test.

Kreyenhagen Hills Test

Coalinga, California.—Richfield Oil Company has made a location for a test in the Kreyenhagen Hills, about 16 miles southeast of this city and on Section 33-22-16. This will be the first deep test ever drilled in the district, which bears a slight resemblance to the Kettleman Hills structure. Two shallow tests have been drilled with cable tools but they were abandoned far short of the objective set by Richfield Oil Company.

New Test of Midway Dome

Denver. — Midwest Refining Company is building rig for the deep test on Midway dome structure, some 12 miles north of Casper, Wyoming, for the account of Saltmount Oil Company. The location is the northern end of the structure and near the center of NE NE 25-35-79. It is just east of the location on which the Midwest Refining Company drilled to 4822 feet, with several good showings, some five years ago. Midwest Refining Company also drilled another test on the structure at an earlier date, but only to 2700 feet. Texas Production Company drilled to 3800 feet in a test, also on this structure.

Contract for drilling has been let to Noble & Olson of Tulsa, who are at present moving in material. A combination rig is to be used. Cable tools will drill to 300 feet where 16½-inch conductor will be set.

It is planned to test the Shannon at about 2450 feet, and set 10-inch on top of the second Wall Creek at about 5200 feet. String of 8¼-inch casing will be set on top of the Lakota at about 6200 feet, and seven-inch seamless pipe on top of the Sundance at 6700 feet. The estimated depth to the Tensleep is 7800 feet.

Louisiana--Arkansas Field Notes

Zwolle Field Extended In Three Directions

SHREVEPORT.—Spreading out of the Zwolle field in three directions, including a potential four-mile eastern extension and a half-mile western extension, making the producing area 17 miles in an east and west direction, featured the oil development in this territory during the last week.

Cartersville recorded several dry holes and only one pumper. The new Urbana district of Union County, Arkansas, the state's deepest producing field, received another set-back with Marine Oil Company's P. Winn Estate B-2, Section 10-18-13, again turning to salt water after having been deepened, and Simms Oil Company's M. H. Simms A-1, in the same section, showing 75 per cent salt water with its first 24 hours' yield on the pump.

While the four-mile eastern extension of Zwolle, which is in Sabine Parish, Louisiana, is not entirely assured, Pelican Natural Gas Company's Long Leaf Lumber Company 1, Section 4-7-11, is being standardized at a total depth of 2425 feet with more than 50 feet of oil in the hole. The same company, whose chief stockholder is Samuel D. Hunter, Shreveport independent operator, has derrick up for Long Leaf Lumber Company 2, Section 20-7-12.

A half mile west of production in the older part of the Zwolle field in Section 14-7-14, R. L. Gay, Trustee's, Bowman-Hicks 7, also in that section, is making oil heads while being standardized at 2450 feet. So large are the heads that a two-inch gathering line has been laid to tankage a half mile away and the output is being saved. As has been Gay's custom in this part of the field, he set 8¼-inch casing at the top of the chalk rock formation at a depth of 2090 feet.

One mile due north of Benedum & Trees' Bowman-Hicks A-1, near the center of Section 34-8-12, the 12-mile eastern extension well completed last November by Gay, A. H. Tarver and the Shreveport-El Dorado Pipe Line Company are pumping Sabine State Bank 1, SE NW Section 27-8-12, at a total depth of 2680 feet. The well pumped 95 barrels for the first 24 hours but the owners expect the daily yield to be around 40 to 50 barrels.

Meanwhile Olsan Brothers' Hooker 1, SW SE Section 27-8-12, almost on a line between Tarver's pumper and the Bowman-Hicks A-1, which has been standing for several weeks at 2625 feet and almost given up as a failure, although a little oil had been standing in the hole, several days ago accumulated enough gas pressure to make a head and is expected to make a pumper.

Loring Oil Company, which completed Sabine Lumber Company 1, SW NE Section 34-8-12, a half mile northeast of Bowman-Hicks A-1, as a 50-barrel flowing well at a depth of 2341 feet, have deepened it to 2360 feet and it is flowing 1497 barrels daily through tubing.

In the west part of the east Zwolle field on the outskirts of the town of Zwolle, after a series of failures had followed several good producers, David and Tyson during the last week completed Neville and Roberts 1, in Section 318-12, as a 75-barrel flowing well at a depth of 2187 feet in the Marlbrook marl. In the same section C. L. Jett, Trustee's, Jones 1 is bailing with much oil in the hole at total depth of 2170 feet.

Deep Test

A mile south of production in this part of Zwolle, W. G. Gray is making something of a deep test of Nulden 1, Section 6-7-12, and is drilling gumbo at 3232 feet. Six and five-eighths-inch casing was set in this well at 2197 feet and the Blossom sand was topped at 2823 feet.

Between the western part of the east Zwolle field and the older part of the district Ohio Oil Company is coring at 2132 feet in Bowman-Hicks 1, Account 2, Section 6-7-13. This test topped the marl at 2062 feet and went into the chalk rock at 2092 feet. Elevation is 272.63 feet.

Three miles north of the original Zwolle production H. S. Autrey is drilling in Midway marl at 1948 feet, having topped this formation at 1907 feet, surface elevation being 160 feet, in Long-Bell Lumber Company 1, Section 35-8-14. Eight and a quarter-inch casing was set at 1804 feet.

West of production in the east Zwolle area W. F. Lacey and associates abandoned Knouse 1, Section 36-8-13, as a dry hole at 2563 feet. Bobe Elmore abandoned Bolin 1, Section 31-8-12, as a dry hole at 2602 feet.

Besides Long Leaf Lumber Company's test, there were four other new locations announced in Zwolle during the week. L. D. Allison has derrick up for Holliday 1, Section 31-8-12. McFan and Pace have derrick up for Reeves 1 in the same section, and W. D. Perritt is building derrick for Crow 1, also in that section. Benedum and Trees have derrick pattern laid for Bowman-Hicks 9, Section 34-8-12, south of the same company's Bowman-Hicks 3, NE SE of the same section, completed recently as a 40-barrel pumper. The same company has had derrick up for some time, for Bowman-Hicks 4 in the same section and is now rigging up as it is a western offset to the same company's Sabine Lumber Company 1.

Four new locations were announced in Cartersville, Bossier Parish, Louisiana, as well as the beginning of rigging up for two old tests to the oil horizon around 3150 to 3200 feet. Arkansas Fuel Oil Company has derrick up for Barnett B-2, Section 26-23-12, on the west edge of production and is rigging up for Ramsey 1, Section 31-23-11. Texas Company made locations for Wilkinson 7 and 8, both in Section 36-23-12 and is also rigging up to deepen Henry Rose 1 and Peyton 1, both in Section 31-23-11.

Natural Gas Products Company is pumping 25 barrels from United States 2, Section 31-23-11, at a total depth of 3177 feet, this being the only Cartersville producer added during the week. Phillips Petroleum Company obtained two dry holes in Bolin 3 and 4, Section 30-23-11, and The Texas Company abandoned Peyton 4 in the same section as a dry hole at 3200 feet total depth.

Five miles due east production in Cartersville and a mile north of production in Sarepta, Webster Parish, Pat Hudson's B. L. Slack 1, Section 36-23-11, is pumping 20 barrels of oil and 600 barrels of salt water from total depth of 2471 feet with four feet of sand. This is the producing horizon of the Sarepta area.

Urbana District Active

In the Urbana district of Union County, Arkansas, Marine Oil Company is cementing bottom to abandon Winn Estate 2, Section 10-18-13, after the well flowed 92 per cent salt water in 4000 barrels of fluid daily after being deepened to 3545 feet from 3534 feet, where it had been choked to death by salt water. Simms Oil Company's M. H. Simmons A-1, in the same section, started off pumping 1400 barrels of fluid, 75 per cent salt water, but has at latest report

increased its yield to 2000 barrels of fluid daily, 60 per cent basic sediment and water. Total depth is 3532 feet. The same company's Simmons B-1, in the same section, after being shut down at 3331 feet, is now washing bottom at that depth. J. W. Olvey, drilling G. G. Simmons 1, Section 15-18-13, has spudded in and is now drilling at 2100 feet. Lion Oil Refining Company, drilling Ballard 1, Section 18-18-13, after missing the oil producing horizon at 3500 feet, is now reaming to bottom at 4090 feet after encountering a salt water sand at 4051 feet. Marine Oil Company's Thompson A-3, Section 10-18-13, the discovery well of the Urbana deep sand, is showing an increase of salt water and basic sediment in its yield, only about 40 per cent of the 2000 barrels fluid yielded daily being oil, as compared to 50 per cent, the latter ratio having held for several weeks.

Three Locations in Arkansas

Three new locations were announced in Arkansas during the week. H. L. Hunt, Inc., is building derrick for J. E. Trammell 1, SW NW Section 28-18-12, Union County, a wildcat. Modisette Drilling Company, which has several producers of small capacity in the Hillsboro district of the same county, a new area, made location for Union Sawmill 4, SW NE Section 14-8-14. On the northeast edge of the Ouachita County part of Smackover, J. D. Reynolds made location for Berg Fee 4, SE NW Section 27-15-15. Two old wells in Smackover started workovers during the week. After being temporarily abandoned for several months, McDuffie 1, Section 32-19-16, in the southern part of Union County, in the Upland wildcat area, was abandoned as a dry hole at total depth of 4506 feet by Lion Oil Refining Company.

In Northeast Louisiana, Lochnager Oil Company, which had abandoned Taliaferro 1, Section 26-9-6e, Catahoula Parish, Manifest district, has finally moved rig from the location. Total depth was 900 feet. No casing was set.

Two derricks are going up in the Shifttail Lake offshoot of the old Pine Island field of Caddo Parish, Louisiana, as offsets to Falcon Drilling Company's Nunnelly 3, Section 29-20-15, completed in the Woodbine at total depth of 2330 feet and gauging 1000 barrels for the first 24 hours. The well later had dropped to 380 barrels daily. Falcon Drilling Company is erecting derrick for Muslow 3 in the same section and The Texas Company is doing likewise on Fee 2, also in the same section.

Southwest of the Bellevue shallow field of Bossier Parish, Louisiana, Harry Morgan and Shreveport-El Dorado Pipe Line Company abandoned Weatherbee 3, in Section 21-19-11, as a dry hole at 2405 feet but have spudded for Weatherbee 4, an offset in the same section, and set 10-inch casing at 112 feet.

Two new locations were announced in the wildcat oil area in north De Soto Parish, Louisiana, near Holly, recently by R. O. Roy in Farmer E-1, Section 5-13-13, which completed as a 2502-barrel flowing well, is still flowing over 1000 barrels at depth of 2882 feet. Roy has a new derrick up for Whittaker A-1, also in Section 5-13-13. Whittaker 1 was completed as a salt water hole and abandoned at depth of 2950 feet by Roy in the autumn of 1928. The latter well was in Section 4-13-13. H. L. Hunt has derrick up for Furman 1, Section 5-14-13. Odell and Lawton are rigging up to deepen Harris 1, Section 11-13-14, which was drilled to 3140 feet by Danciger Oil Company several years ago.

Two wildcat tests were launched in Bossier Parish. C. H. French is rigging up for Biedenharn 1, Section 23-21-14, and Louisiana Gas & Oil Company is rigging up for Crystal Oil & Refining Company 1, Section 7-21-11.

In Concordia Parish, Northeast Louisiana, A. G. Glassell has made location for Pittsfield Planting Company 1, SE SW Section 41-8-10e. Natchitoches Parish, east of Zwolle, obtained its third test when W. M. Coates made location for Collins 1, NW NE Section 28-9-10. There were three other North Louisiana locations during the week, all in proven areas.

Mississippi Drilling Operations On Increase

JACKSON, Miss.—With Cane River Oil & Gas Company erecting derrick for Lufkin 1, Section 15-5-1e, Hinds County, the number of operations or derricks in the Jackson area embracing Hinds and Rankin Counties, was increased to 15. A sixteenth operation soon to be under way is Magnolia State Oil Company's Brown 1, Section 19-6-1e, Hinds County, which is a derrick pattern.

Gulf Refining Company's Rainey 1, Section 13-5-1e, Rankin County, after losing returns at total depth of 2649 feet, tested 300 feet of water in a drill stem test at that depth and then began to lose returns again at the same level. This well plugged back to 2500 feet from 2520 feet after testing gas, salt water and a show of heavy oil at the latter depth. The well tested salt water again after plug was drilled, the gas, which at 2520 feet had been estimated at 5,000,000 to 7,000,000 feet, was less. Deepening then was begun.

Jackson Oil & Gas Company, after getting chalk rock cores showing salt water below 2600 feet after testing salt water at 2546 feet, went on down to 2747 feet in sandy limestone and shells, where it shut down Taylor 1, Section 35-6-1e. Rig is being repaired. Love Petroleum Company's Mendoza 1, Section 11-5-1e, Hinds County, after coring black shale from 2326 to 2335 feet, topped the chalk at 2445 feet and tested dry with a show of gas in a drill stem test from 2439 to 2446 feet. Six and five-eighths-inch casing was was set at 2444 feet with total depth 2446 feet.

Louisiana Gas & Fuel Company has set eight and one-eighth-inch casing at 2506 feet in Harris 1, Section 35-6-1e, after topping chalk at 2506. feet and hanging casing 150 feet off bottom. It was finally dislodged by lubrication. Operators are ready to drill plug.

In Section 28-6-2e, Rankin County, Mississippi, Interior Oil Company is drilling at 475 feet in Moore 1. Pearl River Oil & Gas Company, in Section 12-5-1e, Rankin County, has derrick up for Littlefield 1, and is waiting on rig.

Ben White shut down at total depth of 2004 feet for months in Old Hen 1, Section 26-10-4, Claiborne County, has finally abandoned it as a dry hole.

Lauderdale Oil & Gas Company after waiting for several months to drill in Lackey 1, Section 2-7-16, Lauderdale County, Mississippi, near Meridian, tested 20 fourbles of salt water and over 100 feet of white water, and is arranging to deepen. Total depth is 2816 feet and 8¼-inch casing is set at 2790 feet. Boyd Hammond has abandoned the derrick he had up for Craig 1 in Section 2-6-14 of the same county.

Alcorn Petroleum Company has rebuilt derrick for Matthews 1, Section 14-2-7, Alcorn County, which has pulled in while fishing for 12 joints of six-inch casing. Operators now plan to run 5 3/16-inch casing at 2393 feet. Total depth is 2735 feet.

P. J. McAlpine's O'Neal Heirs 1, Section 8-2s-13w, Lauderdale County, Alabama, is drilling blue limestone at 745 feet.

Chester County Oil & Gas Company's Montgomery 1, Decatur County, Tennessee, is drilling at 1832 feet.

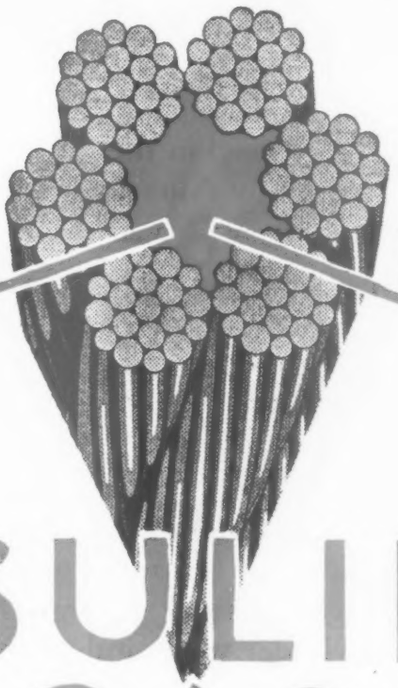
Spring Coulee Wildcat

Calgary, Alberta.—Under the auspices of Humphreys Corporation of Denver and Texas, the Alberta Pacific Consolidated has spudded in an interesting wildcat well on the Spring Coulee structure, in Southern Alberta, for the account of the Canadian Exploration Company, the Humphreys subsidiary.

Quite an elaborate ceremony attended the spudding in, with a large number of interested Calgary and Lethbridge persons in attendance.

The structure lies 20 miles north of the international border and follows the natural trend of the Rocky Mountain uplift northwest and southeast. To the southeast lie the Del Bonita and Shanks Lake wildcat structures and the producing fields of Red Coulee, Kiven-Sunburst, and, still farther along, into the great Mid-Continent area—the Cat Creek, Salt Creek, and Teapot Dome fields. To the northwest, along the same series of folds, lie the Commonwealth's Blood Reserve structure, and the Turner Valley crude naphtha field.

IT PENETRATES TO THE CORE



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—is the first REAL PROTECTION wire lines have ever had . . .

BECAUSE it penetrates more rapidly than any ordinary petroleum oil . . . and THEN forms a film over every strand that cannot be dissolved, penetrated, or in any way affected by sulphur or alkaline agents encountered in drilling.

Field tests have proven that INSULINE 269 more than doubles the life of any wire line, when applied regularly after every sixth tower.

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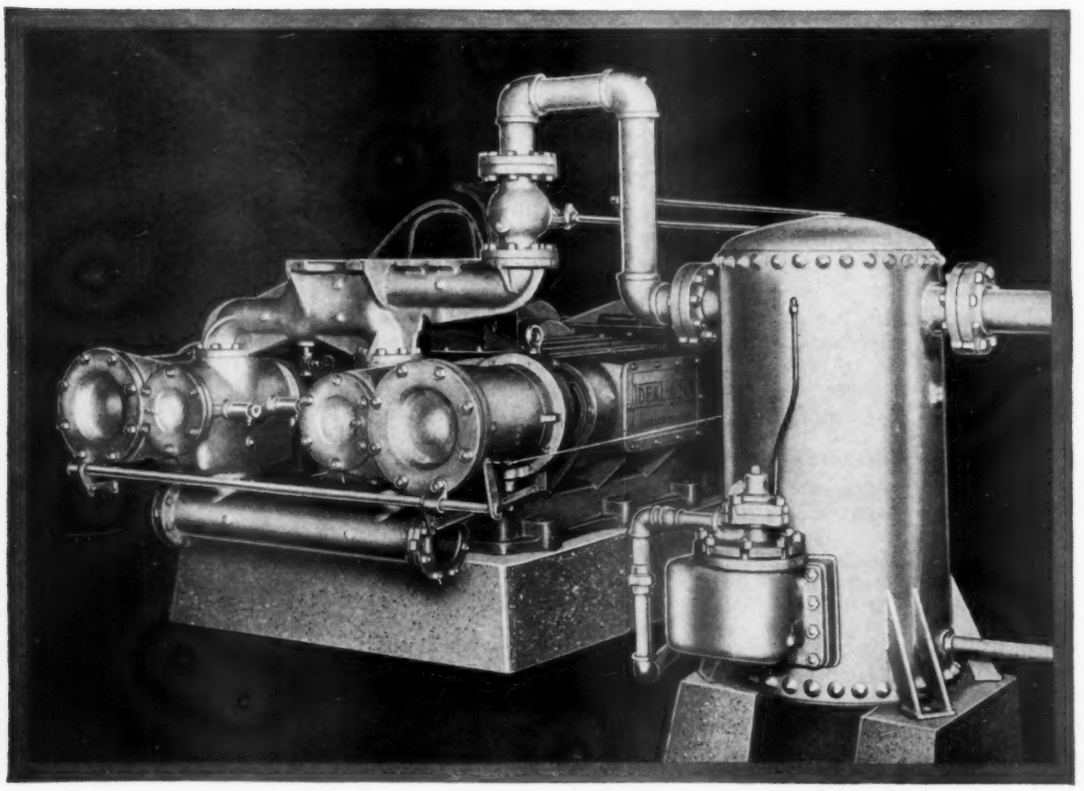
Hooking Up an Extra Heavy

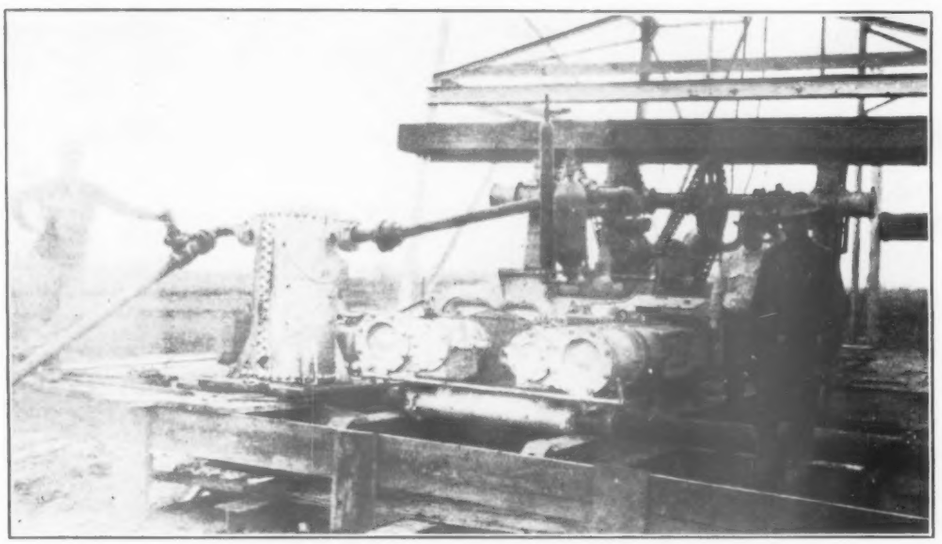
THE first large capacity steam separators to be used in the oil fields were manufactured by Ajax for use with piston valve engines.

All Ajax Engines in the field other than Roller Bearing Engines are equipped with slide valves. This new large capacity Separator will benefit these engines also . . . keeping water from cylinders . . . relieving engines of strain necessary to force water back thru the valves . . . improving lubrication because water is not present to wash sides of cylinder walls and valve seats.



Ask the National Supply Company man to tell you about it.

Separator with IDEAL-AJAX



This Shell Oil Co. hook-up at Oklahoma City shows the new large-capacity AJAX Separator—the latest IDEAL-AJAX equipment.

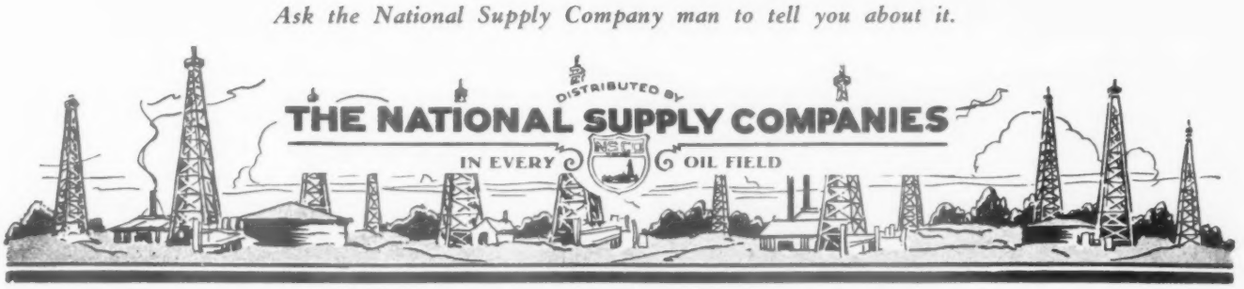
All the fields are reporting remarkable performance with the New IDEAL-AJAX Roller Bearing equipment.

Made by AJAX IRON WORKS, Corry, Pa.

IDEAL-AJAX

ROLLER BEARING STEAM DRILLING ENGINES

Ask the National Supply Company man to tell you about it.



Bolivia's Organic Petroleum Law Up for Passage in August

THE proposed Bolivian organic petroleum law is scheduled to come before the attention of the Bolivian congress which convenes in August, 1930, at which time it is anticipated that favorable action on this instrument will be taken.

The proposed Bolivian petroleum law is covered in six chapters, including every detail of procedure in securing rights to land for the purpose of producing petroleum; and the interpretations of the law in eight chapters.

Chapter 1 of part one deals with interpretations of existing regulations concerning petroleum development, and establishes the limits of development by zones. The unit of measurement of petroleum concessions is defined as a square whose sides are 100 meters in length, measured horizontally, and all concessions for exploration shall be in the form of rectangles whose sides shall not exceed the proportion of one to 10, and all units of the concession shall be contiguous. All or only a part of the area petitioned, shall be granted by the executive power; and within 50 kilometers of the frontier no concessions of petroleum lands will be granted.

Four zones are established in the bill, for petroleum exploration. Zone One includes all of the Altiplano from the summits of the eastern Cordillera west to the frontier of Peru, Chile and the Argentine. Zone two includes that area south of the latitude of the city of Santa Cruz de la Sierra, south to the frontier with the Argentine. Zone three has as its southern limit the degree of latitude passing through the city of Santa Cruz de la Sierra on the west to the limit of the first zone, on the north the Peruvian frontier, and on the east a line drawn from the intersection of the 69th meridian with the 13th parallel. Zone four comprises all the rest of the republic.

And finally, two classes of petroleum concessions are established, namely, concession for geologic exploration, and concession for exploitation. The latter concession is divided into two pariods, namely, the period of preparatory drilling, and the period of production.

Time

Chapter two concerns the concessions of permits for exploration. The three articles of this chapter set the time for presentation of petitions; the cost; the time limit for registrations with the Petroleum Register, which is 15 days; the presentation annually in January of a geologic report on exploration made; and finally article three specifies the six reasons for cancellation of permits as follows: expiration of term; non-payment in January and July of taxes for two consecutive semesters; for the paralization of exploratory work during the term of one year; on the petition of the grantee on the basis of poor work done; for non-presenation of the annual report; and for the non-presentation for registry of the act of concession within the specified 15-day period.

The next chapter concerns concession for exploitation in partnership with the state. Ten articles included in this chapter fix: the number of hectares for exploitation and the time limit of 50 years, the royalties of the government by zones, the two periods of exploitation with tables showing established royalties in zones on a sliding scale of production; the surveying and demarcation; the receipt of a map from the grantee, signed by an engineer, which shall be registered, said map specifying the limits and other principal details which serve as a basis for the commencement of drilling; the period of preparatory drilling and actual production, both within the first six months; the drilling of one well of 5000 meters depth for each 50,000 hectares or fraction thereof contained in the concession, with due consideration given for difficulties of drilling, making impossible the fulfillment of the depth requirement; the total non-responsibility of the state; the presentation of documents covering descriptions, maps, plans and other memoranda showing the location of projected wells; the presentation of a report to the Ministry of Register at the end of each semester, of the grantee's activities and accomplishments of the past semester; and finally, the liability of the enactment by the state of an embargo on the property of the grantee in the event of failure to fulfill the obligations of his contract.

Chapter four deals with the rights of the grantees in partnership with the state, in five articles. Article one establishes the rights and privileges of the grantee; article two compensation for exploitation, which shall be the entire petroleum output less the state royalty; article three the fact that at the end of the 50-year period all property, concessions, facilities, etc., of the grantee shall become the property of the state; article four provides a three-month period in which a delinquent grantee may have time to rectify the delinquency; and article five provides that all questions arising between the grantee and the state as to interpretations of the limits of the contract, shall be submitted in a law suit to the supreme court of Bolivia.

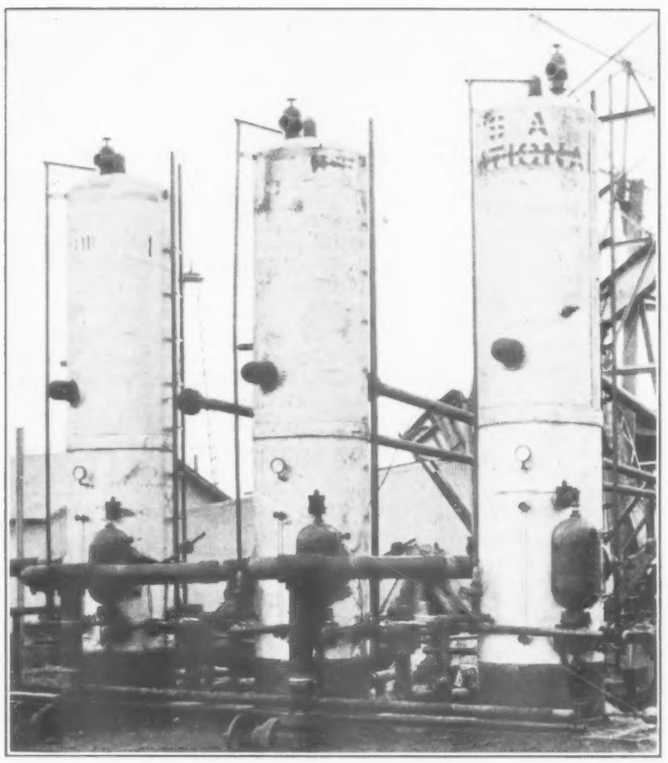
Chapter five concerns the obligations of the grantee in partnership with the state in 13 articles. The chapters in their respective order provide: the rate of tax as 40 cents; loss of property in the event of failure to comply with regulation, except that property on which wells have been brought in; the renouncement by the grantee of any part of the concession; the basis on which royalty is determined; the requirement that the grantee shall transport through his carrier or pipe line that part represented by the state's royalty; that grantees having pipe lines shall have to transport the oil of neighboring grantees not possessing such facilities, and at a charge to be established by the state; and likewise with the refineries; that within 30 days of each three-month period the government shall indicate to the grantee whether its royalty shall be received in oil or in money to the value of the same; that grantees having refining facilities shall furnish for the consumption of the zone the products required, and shall only export the excess above consumption; that companies, groups or individuals remain subject to the payment of taxes; that concessions in partnership with the state shall be annulled ipso facto on the failure of the interested parties to pay the annual taxes in January and July for two consecutive semesters; that if physical or economic conditions of a well do not prevent its production, the government may oblige the grantee to produce it under penalty of cancellation; that grantees shall have the following obligations: to make reports each three months, of the state of drilling; to advise when a water horizon is reached and the methods adopted to prevent the trouble occasioned; to suspend the drilling in known regions before reaching the oil horizons unless they have taken the technical precautions to prevent the loss of oil; to advise the date on which the well was cemented; to construct the necessary works to prevent accidents; to plug the hole efficiently if the well is dry or contains salt water; and finally, the last article in this chapter provides that the grantee shall employ Bolivian personnel in the higher divisions of their offices provided these persons shall fulfill the requirements of the positions in the proportion of at least 30 per cent, and oblige themselves to hire with preference, workers of Bolivian nationality.

Legal Domicile

Chapter six concerns general dispositions, in 16 articles. Article one of this chapter concerns the reservation of one-

GAS RELEASED FROM

NATIONAL SEPARATORS



IS EXTRA DRY!

Greater efficiency in the handling of large volumes of gas and oil is usually given as the basis of the popularity of National Separators in the Oklahoma City Field. After all the principal duty of any separator is to reduce to a minimum the liquid content of the gas released . . . check-up on the performance of any National Separator you see on the job!

A FEW PERFORMANCE RECORDS OF NATIONALS IN THE OKLAHOMA CITY FIELD

Watters No. 1

Three No. 4 A National Separators handling 96,000,000 cu. ft. gas and removing 105,000 gals. gasoline—64 gravity, with working pressure of 310 lbs.

The released gas contained only 15/100 gal. gasoline per 1,000 cu. ft. of gas.

Petty No. 2

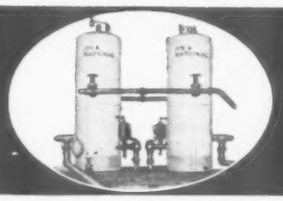
Two No. 4 A National Separators handling 58,000,000 cu. ft. gas and removing 13,120 gals. gasoline—64 gravity, with working pressure of 300 lbs.

The released gas contained only 22/100 gal. gasoline per 1,000 cu. ft. of gas.

Nettie Emerson No. 1

Four No. 4 A National Separators handling 80,000,000 cu. ft. gas and removing 27,300 gals. gasoline—64 gravity, with working pressure of 200 lbs.

Released gas contained only 14/100 gal. gasoline per 1,000 cu. ft. of gas.



NATIONAL TANK CO.

TULSA OKLAHOMA

fifth of the producing zone to the state, that part to be chosen by the state at the time the concession is made. Article two of this chapter provides that the grantee shall maintain legal domicile in the Republic and shall be subject to all obligations of a general character then existing or to be established in the future. Next that the government shall superintend the exploration and exploitation. The next article provides that the grantee shall not cede nor transfer any concession to any person, company, corporation or entity whose governments do not accord the same rights to the citizens of Bolivia, or that the grantee shall cede his concession to any person, corporation, etc., or government without the permission of the state. Next that the grantees shall not instigate any diplomatic claims referring to the obligations, rights, or emergencies of the contracts. Other articles in this chapter in their order provide: a sum for the maintenance of the General Administration of Mines and Petroleum; that grantees under the mining law shall convert themselves under the present law, as grantees in partnership with the state; that executive power may also grant concessions for pipe lines, storage farms and refineries according to regulations to be established by the Ministry of Industry; that grantees of metals and inorganic substances who may find within the limits of their concessions oil or other hydrocarbons, shall have the rights to exploit them only under the provisions of this proposed law; that certain definitions for the effect of this law, shall be valid—these definitions concern: grantee in partnership, period of production, production, well in production, and producer; that present provisions of the mining laws and others which are not in conflict with the present law shall be applicable to the petroleum concessions, and those in conflict are annulled; that the petroleum industry is declared a public utility, and that as a consequence the government may expropriate the petroleum lands which have been conceded in partnership according to the laws governing expropriations of a public utility; and finally that in case of internal war or external war, the State may make use of the oil or its derivatives, paying the grantee the cost price plus 15 per cent.

Regulations of the Petroleum Law

Under regulations of the proposed law, chapter one concerns the conditions which the petitions shall fulfill.

The articles—six in number—make the following provisions: that the petitions for grant of petroleum deposits shall be presented to the General Administration of Mines and Petroleum on stamped paper whose value is 20 bolivianos; that the petition shall give name, civil state, profession, nationality, residence and postal address of the petitioner, point from which survey shall begin, number of hectares desired, names of adjacent concessions, the department, province and township on which the petitioned area is located; that the petition shall be accompanied by a map drawn on tracing cloth, that all concessions shall be located as prescribed by article four of the Petroleum law; that the petition and other writs shall be signed by a lawyer; that all petitions or other writs shall be presented in duplicate and the second copy be permanently filed in the General Administration of Mines and Petroleum.

Chapter two, in five sections concerns the transactions, prescribing; the writing of the date and hour of filing petition; the placing of the petition with the registry section of the General Administration; that the chief of the Petroleum Section shall present a report to the Director General regarding the petition; that the legal adviser of the General Administration shall present a report in duplicate to the Director General regarding the legality of the petition; and that the General Director after due consideration, shall concede or deny the petition, and his decision shall be approved by the Minister of Industry and the President of the Republic.

Chapter three concerns the public deed; articles in order prescribe: the inscription of the public deed; its registration; its publication; its filing; that the title transactions shall be at the disposition of the public; and that the reports and maps shall not be attached to the file of title but shall be kept in a special file in the General Administration and only grantee or persons authorized by him shall have access to these files.

Chapter four concerns the survey and demarcation. Articles provide that: the survey shall be made by a registered engineer; that after survey has been made due notice of the placing of monuments shall be given the General Administration; that the commission shall be accompanied by a person holding a power of attorney from the grantee; that this commission has confirmed the plans, and is prepared to sign three copies of the plans; and that 15 days before the departure of the government engineer, the grantees of adjacent concessions shall be notified by mail, or otherwise.

Chapter five concerns the oppositions. Articles in order provide that: persons believing their rights invaded may enter an opposition within 70 days from the date of publication of the petition; that during the course of the opposition, the grantees shall pay the taxes, and that when the rights have been established, those against whom judgment was returned shall recover the taxes which were paid conditionally; and that the Ministry of Industry shall resolve the opposition once only in its capacity as judge in representation of the Executive Power.

Chapter six concerns transfers; articles in order provide: that they be made under the stipulated conditions of this law; that such transfer petitions be in written form to the Ministry of Industry; that receipt of petition shall be inscribed at time of receipt; that when a favorable report is given, the first official shall dictate a transfer within three days; that the transfer shall be returned to the Ministry of Industry only after it has been signed by the President of the Republic; and that when signed by the Ministry of Industry, the transfer be sent to the Notary of Mines in order that he may notify the grantees, and extend the public deed.

Chapter seven prescribes that the tax on transfers shall be at the rate of 10 per cent of the value of the transfer, except a transfer of a permit for exploration, in which case no tax is to be paid.

Chapter eight concerns transitory dispositions; articles in order prescribe: that only working days shall be taken into account, Sundays and holidays being excepted; that in no case beside the periods fixed by this law, shall the petitioner impute to the government officials who intervene in the transactions of petroleum concessions, the necessity of moving his affairs, it being the petitioner who has the obligation of maintaining the activity of transactions, and lack of interest on the part of the petitioner shall imply the abandonment of the petition; that within a period of three months from promulgation of this law, those concessions which are being considered in the Ministry of Industry, must be perfected, and those not perfected within this time shall be considered cancelled ipso facto without the necessity of declaratory edict and the titles shall be filed with an annotation which witnesses this; and finally, that the provisions of this law shall go into effect on the day of its promulgation.

Red Coulee Field Active

Coutts, Alberta.—The new Red Coulee field, lying on the international boundary between Montana and Alberta, is the most active field in the northern part of the Rocky Mountain States. Cosmos Petroleum's well is still the center of interest in this field. A water encroachment has proved stubborn and several weeks have been spent in an attempt to mud it off. Last week the crew ran tubing and rods and on a 21-hour test the well put 420 barrels into the tanks.

There are 21 wells either drilling or preparing to drill in this new field. Among the operators just entering the district is Ohio Oil Company, which is moving in equipment to its block on the Montana side, not far from the Cosmos and Monalta Companies' wells. Work of actual drilling will be under way within a week.

An electric power line to serve operators in the field is being strung up by Great Northern Utilities Company. The completion of this will make electrical power available both for drilling and pumping, and will materially reduce the cost of both operations. Pipe lines of the Maple Leaf Refining Company are connected with storage in the field and a new pump is installed.

New Colorado Wildcat Test

Walsenburg, Colorado.—A wildcat well has been spudded in by Spanish Peaks Oil & Gas Company on the Romero structure, 17 miles east of here. The well starts in the Dakota and will test the Permian, Pennsylvanian, and possibly the Mississippian. Colorado and Illinois capital is financing the test.

The BEAVER Line now offers you . . . . . three types to choose from

Whether you prefer the heavy weight or the light weight self-contained die stock—or the separate die type of tool—you will now find a 1 to 2″ Beaver to exactly meet your preference. And all of them embody exclusive worth while advantages.

1—The Four Poster Semi Self-Contained 4 sets of dies—no bushings. No. 8 Plain and No. 8-R Ratchet.

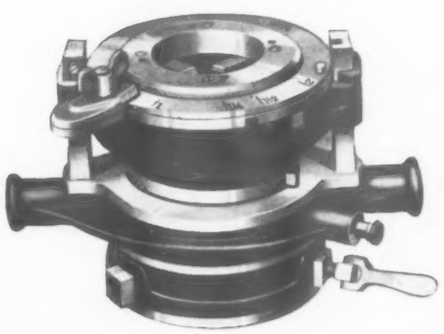
Advantages:—Positive die retaining device; open die slots; extra heavy upright posts; grooved bolt and washer for centering the pipe; man's size grip screw; self-contained rear end—no loose bushings; improved ratchet pawl; lighter in weight—yet stronger easy cutting; exceptional die quality; cuts drip threads uniformly; rear end takes 2 inch coupling for cutting nipples; individual die segments are interchangeable; dies are interchangeable with other standard four post tools.

Ask for Bulletin C-1.

2—The Light Weight Self-Contained One set of dies—no bushings. No loose parts. No. 11 Plain and No. 11-A Ratchet.

Advantages:—Simple in construction; light in weight; and easy cutting. Dies adjustable for over, under or exact standard. Regardless of variation in fittings, tight joints can be made. Drip threads and short nipples up to 2″ can be cut readily. A heavy drop forged wing nut firmly locks the dies to desired size—easy to grip and tighten. Improved ratchet pawl; man's size grip screw; grooved bolt and washer for centering the pipe; self-contained rear end—no loose bushings. One piece tools.

Ask for Bulletin C.



3—The Heavy Weight Self-Contained One set of dies—no bushings. No. 25 Plain and No. 26 Ratchet.

These die stocks are especially suited for use by oil and gas companies whose work requires heavy rugged tools. They have all the time and trouble saving advantages of Nos. 11 and 11-A Beavers but are of heavier construction—six pounds heavier in the plain tool and 10 pounds heavier in the ratchet—and their price is higher. Dies are adjustable for over, under or exact standard. Universal chuck eliminates bushings—will cut drip threads uniformly, and will take a 2 inch coupling for cutting nipples. One piece tools.

Ask for Bulletin C-2.

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THE BORDEN COMPANY, Warren, Ohio.

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Firm Name ..... City and State .....

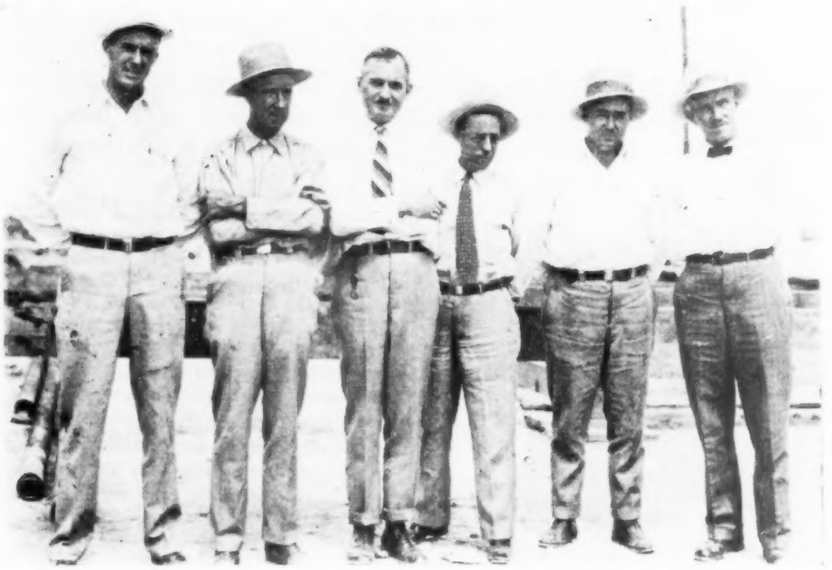
Street Address ..... Your Name .....

TRADE MARK

WITH THE MEN IN THE FIELD

W. C. "PAT" SUTTON

Production superintendent for Indian Territory Illuminating Oil Company at Oklahoma City. It was under Mr. Sutton's direction that the successful shutting-in of this company's Mary Sudik 1, was accomplished. Before being sent to Oklahoma City, Mr. Sutton was production superintendent for this company at Seminole, with headquarters at the widely known Walker camp, Bowlegs field.



This gang was rounded up off the derrick floor of Big Lake Oil Company's Santa Rita 131, Texon, Texas, where the setting of the longest string of pipe east of the Rockies was in progress. On July 14 the crew ran 7810 feet of five-inch Simancro, special alloy seamless steel, pipe, the new product of Spang, Chalfant & Company. The well, being drilled with cable tools by electric power, is headed for the 8523-foot sand found in Texon Oil & Land Company's University B-1 about a mile away. On the left is Mike Griffith, purchasing agent and assistant to the field superintendent for Big Lake Oil Company. Reading to the right from Griffith are: Harry M. Reigle of the Richmond Drilling Company, contractors on the well; H. G. Texter, sales engineer for Spang, Chalfant & Company, who maintains headquarters at Tulsa; F. Charles Shugart, field representative, Spang, Chalfant & Company, St. Louis office; Percy Bosworth, Richmond Drilling Company, Big Lake, and James S. Postgate, engineer for Big Lake Oil Company.

S. F. Sheeders, president, Sheeders Oil Company of Ohio, and W. C. Francis, field manager for that company, which is operating some producing properties in Osage County, Oklahoma. These gentlemen rigged up a 4½x4½ Curtis Compressor with a five h. p. gas engine and increased production in eight near-depleted wells from 675 to 1760 barrels per month in half a year. Their successful practices of lease economics during the past two years has made their Avant property a model for inspection by many companies over the state.

W. C. Bob, field superintendent, and Harvey Williamson, assistant superintendent, Cole Petroleum Company, in the Cole field, Laredo district, Webb-Duval Counties, Southwest Texas. The Cole field is a large producer of natural gas, and also has some oil production. Gas from the field is piped 300 miles, across a large section of the state, to Houston and vicinity.

The Cole field was discovered by the Cole Petroleum Company and is owned principally by that concern.

Sidney A. Judson, chief geologist of the Humphreys Corporation, Houston, in front of the company's warehouse at Barbers Hill, Gulf Coast field. With him, in the picture, is his son, Edward.

Humphreys Corporation is among the principal producers at Barbers Hill, with acreage on nearly all sides of the dome.

502,000 BARRELS OF OIL in 3 months ...thru 1 joint of THE LAYNE milled groove screen

ABILITY

This Greater Production screen has the strength to safely stand the full weight of more than 8000 ft. of drill pipe.

In recent severe tests by the Pittsburgh Testing Laboratory Layne Milled Groove Screen was proven 102½ tons strong—your guarantee of reliability and performance.

This remarkable production performance was established by the Kirby A-8 well at Barbers Hill, Texas. The well came in January 4, and thru March 30 it had produced 502,000 barrels of oil thru one joint of the Layne Keystone wire-wrapped Milled Groove Screen—oil industry's latest and most important invention.

The exclusive and sensational Layne Milled Groove Screen, the culmination of a quarter century's experience and development, does not clog with mud and sand, eliminates "sand-cutting," is a tonic to low pressure wells and is a cushion against "cutting" high pressure.

Install the Layne Milled Groove Screen instead of wishing you had!

The Layne & Bowler Co.

HOUSTON, TEXAS

THE LAYNE NEW YORK CO., 30 Church St., New York City

THE LAYNE & BOWLER CORP., Los Angeles, Calif.

VICKERS, LIMITED London, England

A QUARTER CENTURY OF EXPERIENCE AND DEVELOPMENT

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

CALIFORNIA

Company, Well and Location	Initial Production Bbls.	Depth
LONG BEACH—		
Allied Pet. Corp., Schinner 2	100	8015
Dabney-Johnston Oil Corp., S. B. 5	125	7030
MARICOPA FLATS—		
Hancock Oil Co., No. 4	900	3032
POTRERO—		
Sunset Pacific Oil Co., Community 3	1800	5370
ROUND MOUNTAIN—		
Shell Oil Co., Jewett 2	150	1650
SANTA FE SPRINGS—		
Ambassador Pet. Corp., Baker 14	1200	7600
General Pet. Corp., Anderson 153-F	800	5960
Globe Pet. Co., E. G. B. 1	175	6440
Shell Oil Co., Thompson 6	75	8097
Standard Oil Co., S. G. & J. 2	1300	7920
The Texas Co., Foix 4	60	8100
Wilshire Oil Co., Cecelia 1B	1200	7955
VENTURA—		
Shell Oil Co., Taylor 54	1050	4100
Taylor 46	500	7135

KANSAS

Company, Well and Location	Initial Production Bbls.	Depth
CHASE COUNTY—		
E. W. Marland Inc., Altermus 1, se c ne, 33-18-8e	*	3140
COWLEY COUNTY—		
Lewis Production Co. & Empire O&R, Hill 2, sw se nw, 20-31-6e	40	2903
Derby Oil Co., Hahn 1, se c sw, 10-31-3e	60	3068
COFFEY COUNTY—		
Ellis et al, Rossillion 1, sw se nw, 6-23-15e	55	1528
ELLSWORTH COUNTY—		
J. H. Tatlock et al, Soeken 1, c sw se, 25-17-9w	*	3394
GREENWOOD COUNTY—		
Skelly Oil Co. & Tidal, Wick 20, sw se sw, 27-22-11e	60	1891
HODGEMAN COUNTY—		
Phillips Pet. Co., Soeken 1, c sw se, 25-17-9w	*	3394
McPHERSON COUNTY—		
Mid-Kansas Oil & Gas, Pitts 1, c sw se, 2-19-2w	390	2995
Dixie et al, Voshell 2, se c nw, 9-21-3w	*	2820
Independent O&G, Stucky 1, cel 5-21-3w	*	3750
Atlantic Oil Prod. Co., Stucky 1, cel se, 5-21-3w	*	500
Kansas Oil Corp., Otto 1, sw c nw, 21-20-1w	*	3644
Galt Brown, Zeitlow 1, ne se se, 7-17-1w	*	2897

OKLAHOMA

Company, Well and Location	Initial Production Bbls.	Depth
CADDO COUNTY—		
Magnolia Pet. Co., Rowe 3, se ne ne 36-6-10w,	*	3516
CARTER COUNTY—		
Roy Johnson, Briggs 1, sw c, 36-3s-4w	*	1220
CREEK COUNTY—		
Emerson et al, Brown 2, cnl nw nw, 20-17-10e	50	2125
Pawnee Oil Producing Co., Johnson 5, c se se 14-17-8e	20	2820
Jackson and Wise, Grayson 1, ne se se 20-18-9e	865	2896
J. W. Merrick et al, Brown 3, se c nw ne 27-18-8e	12	1321
H. L. Skelly et al, Grayson 1, se c 22-17-9e	*	1290
GRANT COUNTY—		
Tidal Oil Co., Secatt 1, c ne sw 35-28-3w	¶3½	4153
Gypsy Oil Co., Bilderback 1, se c 27-28-7w	*	6074
HUGHES COUNTY—		
Pioneer Pet. Co., & Prairie, Hensley 1, ne nw ne 32-8-9e	40	3596
JEFFERSON COUNTY—		
O. V. Beck, Seay 8, ne c sw, 34-6s-5w	60	1540

Tabulation and Comparison on Page 76

Company, Well and Location	Initial Production Bbls.	Depth
LINCOLN COUNTY—		
Magnolia, Meyers 1, nw ne ne 17-14-4e	1800	4996
LOGAN COUNTY—		
Wentz Oil Corp., Williams 4, sw nw ne 31-19-4w	62	5970
MARSHALL COUNTY—		
F. W. Merrick, Null 15, se c ne nw nw 24-5s-5e	300	671
MUSKOGEE COUNTY—		
H. L. Jolly, Carolina 4, se c sw nw sw 9-15-18e	8	972
H. L. Jolly, Rentie 1, sw c nw 9-15-18e	*	1105
Carolina 5, ne c se nw sw 9-15-18e	*	1024
OKFUSKEE COUNTY —		
Shell Pet. Corp. & Sheldon, Hopping 1, ne c se 21-12-11e	155	3488
E. L. Robinson et al, Severs 5, "A" c nw se 35-11-9e	6	1487
OKLAHOMA COUNTY—		
I. T. I. O. et al, Fuzzell 2, nw sw nw 19-11-2w	7902	6469
Skelly Oil Co., Hoopes 3, ne nw ne 31-11-2w	¶75 13,195	6400
Slick et al, Hoopes 4, ne sw ne 31-11-2w	¶187 6395	6571
I.T.I.O. et al, Emmerson-Joyce 3, se ne ne 25-11-3w	¶100	6350
Sinclair, School Land 1, ne c se, 36-11-3w	9570	6632
I.T.I.O. et al, Unsell 1, se c ne 23-11-3w	6198	6575
Hennan and Coe, Cunningham 1, nw sw ne sw 1-11-3w	19,497	6407
OSAGE COUNTY—		
Continental Oil Co., & Gypsy, 2, se ne sw 22-24-7e	35	2963
Peter Adamson Jr., 2, se c nw se nw 5-21-9e	*	1631
PAWNEE COUNTY—		
Prairie, Cotton 5, nw se nw 6-20-8e	30	2637
C. C. Chamberlain, Coats 3, cwl sw nw 26-20-9e	*	2209
PAYNE COUNTY—		
Shaffer O&R, Echo Hawk, 2, nw sw ne, 4-18-5e	810	3505
Skelly Oil Co., et al, Ballard 3, sw se sw 32-18-4e	196	4217
PONTOTOC COUNTY—		
Benedum and Trees, Browall 2, ne c nw 31-5-5e	115	2647
SEMINOLE COUNTY—		
Blackwell O&G and Sunray Oil Co., Lusty 2, nw sw se 12-5-7e	¶9½	2864
Prairie O&G, Ground 1, nw c ne 23-9-5e	85	4221
T. B. Slick and Prairie, Anders 1, nw c 23-6-6e	*	4025
STEPHENS COUNTY—		
Wirt Franklin Pet. Corp., Martin 2, ne se se 9-2s-6w	300	2871
WAGONER COUNTY—		
Utopia Oil Co.,, Jones 1-A nw c se se 35-18-18e	*	300
D. F. Finefield, Crow 1, sw c se ne sw 22-16-19e	*	826
Hunter et al, Sier 2, c sw ne 10-18-15e	*	1580
J. L. Dixon, Young 2, (owdd) ne c nw 26-18-17e	*	1625

ARKANSAS

Company, Well and Location	Initial Production Bbls.	Depth
OUACHITA COUNTY (Smackover)—		
Phillips Pet. Co., B. Joyce 10, 33-15-15	55	2003
Sinclair Oil Co., Sewall 1 33-15-15	26	2017
UNION COUNTY (Smackover)—		
E. L. Chapman, Epps 1, 3-16-16	15	2028

EASTERN STATES

WEST VIRGINIA

Company, Well and Location	Initial Production Bbls.	Depth
ROANE COUNTY—		
Federal Oil & Gas Co., Ferrell 2	¶2	
Virginian Gasoline & Oil Co., Hunt 7	10	
Henshaw 1	7	
Hope Construction & Refg. Co., Enoch 4	40	
Heck Oil Co., Kincaid 2	5	
United Carbon Co., Boggs 1	*	
WETZEL COUNTY—		
Cochran & Co., Hoge 1	¶¼	
Moorehead & Butcher, Troy 1	5	
Pittsburg-West Virginia Gas Co., Hibbs 3	¶1¼	
Carnegie Natural Gas Co., Edgel 12	20	
CALHOUN COUNTY—		
Hope Natural Gas Co., Carpenter 1	¶1	
Greathouse 7453	¶1½	
Mace 5037	¶1¼	
United Fuel Gas Co., Sherman District 4223	5	
F .F. McIntosh, Starcher 1	¶1½	
Chemical Oil & Gas Co., Yoak 2	¶1	
RITCHIE COUNTY—		
New York Petroleum Co., Stephens 1	10	
Hope Natural Gas Co., McFarlan 1	¶¼	
Warrior Petroleum Co., Storrs 6	*	
WOOD COUNTY—		
Charles Smith, Castell 1	10	
Athey Bros., Athey 1	2	
Dick Davis, Henderson 1	¶¼	
MARSHALL COUNTY—		
Hope Construction & Refg. Co., Hinkle 3400	¶2	
Manufacturers Light & Heat Co., Youst 1	¶1½	3400
CABELL COUNTY—		
Larner Gas Co., Keaton 99	¶½	
Harshberger Oil & Gas Co., Kilgore 4	¶¼	
MARION COUNTY—		
Manufacturers Light & Heat Co., Youst 1	¶1½	3400
Sutton Bros., Thomas 1	¶1¼	
LINCOLN COUNTY—		
Allegheny Gas. Co., Horse Creek Land 5	¶¼	
Renolds 4	¶¼	
CLAY COUNTY—		
Virginian Gasoline & Oil Co., Summers 9	15	
TYLER COUNTY—		
Gale & Samuels, Thistle 16	10	
LOGAN COUNTY—		
Big Creek Gas Co., Blevis 2	¶2	
MONONGALIA COUNTY—		
Pittsburg-West Virginia Gas Co., Clovis 1	*	
GILMER COUNTY—		
Gilco Oil & Gas Co., Straley 1	*	

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
BRADFORD FIELD—		
Minard Run Oil Co., Tibbits 5	2	
Bell 4	2	
E. DeGolier, Degolier 1	2	
Forest Oil Corp. Fee (1 well)	2	
C. L. Wann & Co.,, Bingham 388, tr 55	2	
Blaidsell & Co., Hanna 1	2	
GREENE COUNTY—		
Greensboro Gas Co., McClure 1	¶½	
Peoples Natural Gas Co., Rose 1	¶¼	

KENTUCKY

Company, Well and Location	Initial Production Bbls.	Depth
DAVIES COUNTY—		
D. J. White & Co., Hamilton 1	*	
Evans & Garrison, J. M. Clark 3	40	
I. J. Clark 4	50	
OHIO COUNTY—		
Hupp & Duff, Stewart 10	250	
Whitehouse 2	¶¾	
James C. Ellis, Bell 1	¶1	
Crow 1	¶1	
Howard 8	35	
D. J. White & Co. ,Burdett Hrs. 1	¶1	
Chester, Claypool & Co., Ralph 17	18	
Cumberland Pipe Line Co., Sharp 2	5	745
Dixon Oil Co., Milligan 2	5	
Penn-Indiana Oil Co., Kelley 12	5	

THE *Miller Sand Pump*

will clean your well *at lowest cost* in ½ the time

With the Miller Sand Pump in the hole you go to work immediately and it stays on the job until you are finished.

With the Miller Combination Bailer and Sand Pump you have the choice of four type bottoms—SAND PUMP bottom, used when cleaning out with tools, CHISEL and STAR bottoms, used with tractor, winch and pulling machines when tools are not used, and BAILER bottom, used in drilling as a common bailer. The Miller Bailer and Sand Pump—the combination tool with a bottom for every job.

In the MILLER the sand line is run through bail connecting directly to the plunger eliminating a rod and permitting use of a 25 or 30-foot tube. Built to stand abuse. Constructed for economical operation; designed for greater efficiency.

Now is the time to conserve your present wells by cleaning out, to get their maximum production. The Miller is the—Oil man's choice for fast and sure work.

Made in 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9-inch sizes, with 20, 25 and 30-foot lengths.

Chisel Bottom

will save the expense of running tools and its chisel shape prevents sticking in tightly packed sands.

Bailer Bottom

will speed up production in cavy holes by time saved in picking up cuttings.

Star Bottom

used for cutting the sand loose and preferred by some to the Chisel Bottom.

Patented
March 1, 1921—No. 1370340
January 20, 1926—No. 1523604

We also manufacture the Chancellor Separator for use at the bottom of the well, and Jiffy Pipe Clamps—the quick economical way to repair leaking spots in any type line at small cost. Write for literature.

For sale by all leading supply houses

MILLER
Sand Pump Company

(Formerly known as the Miller Combination Bailer & Pump Co.)

General Offices and Plant
SAPULPA, OKLA., U. S. A.

SOUTHEASTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
MORGAN COUNTY—		
W. S. Harris, Harris 14	5	....
The Pure Oil Co., Bush 7	15	....
C. E. Bode & Co., Allen 1	2	....
Patterson Oil Co., Thompson 26	¶¼	346
MONROE COUNTY—		
Casey & Rosenbloom, Detrick 7	*	2129
Bigley-Shaffer Oil Co., Aukenman 1	¶¼	1600
Wittmer Oil & Gas Co., Kalnfleisch 1	*	1942
Winkler 3	¶½	1742
NOBLE COUNTY—		
Ohio Fuel Gas Co., Davis-Brown 1	6	887
C. & E. Robinson, Van Fossen 1	*	1700
JEFFERSON COUNTY—		
Braden, Spear & Co., Infirmary land 8	20	....
August F. Decker Trus., Decker 4	2	....

CENTRAL OHIO

Company, Well and Location	Initial Production Bbls.	Depth
MUSKINGUM COUNTY—		
Noah Andrews & Co., State Brick Plant 2	200	3514
Abe Snider & Co., Forgrave 1	40	3561
Crawley & Co., Cherry 1	¶1¼	3615
John Wallsmith, Norman 2	10	....
Ohio Fuel Gas Co., Hance 1	*	4083
LICKING COUNTY—		
Hope Construction & Refining Co., Rector 5	*	778
Settles Oil Co., Smith 5	12	613
Ohio Fuel Gas Co., Davidson 1	130	2949
TUSCARAWAS COUNTY—		
Gordon-Hopwell Oil & Gas Co., Lamneck 1	*	3668
Capital Drilling Co., Paulson 2	160	3676
STARK COUNTY—		
Penn Oil & Gas Co., Limbach 2	¶12	3978
Limbaugh 3	¶2½	3962
MEIGS COUNTY—		
Ohio Fuel Gas Co., Clark 1	*	906
Koontz & Co., Beagle 1	*	....
ASHLAND COUNTY—		
Robinson & Co., Smith 4	20	....
HOLMES COUNTY—		
East Ohio Gas Co., Bucy 1	¶6¾	....
HOCKING COUNTY—		
Asa Straus, Straus 1	¶¼	277
GUERNSEY COUNTY—		
Geo. M. McLaughlin & Co., McNeirney 1	*	1060
PERRY COUNTY—		
Ohio Fuel Gas Co., Sunday Creek Coal 89	*	1164
FAIRFIELD COUNTY—		
Merle Myers, Williamson 1	*	2570

MICHIGAN

Company, Well and Location	Initial Production Bbls.	Depth
ISABELLA COUNTY—		
The Pure Oil Co., State Land A-4	100	....
State Land B-4	550	....
Mellon, Pollock & Whitman, Bowman 1	90	....
H. E. Pollock, Zingery 1	*	3788
MUSKINGUM COUNTY—		
Swastika Oil & Gas Co., Gilbert B-2	50	2047
Lake Shore Petroleum Co., DeVries 1	¶1	2002
ALLEGANY COUNTY—		
National Petroleum Corp., Gere 1	1	2108
GRATIOT COUNTY—		
E. Q. Piquignot, Nass 1	*	3043

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
CADDO PARISH—		
Falcon Drilling Co., Nunnelly 3, 29-20-15	1000	2330
OUACHITA PARISH—		
United Carbon Co., Puckett 2, 15-19-5e	*	3010
RICHLAND PARISH—		
Palmer Corp., Rhymes-England Ptg. Co. 7, 7-16-6e	¶7½	2450
Southern Carbon Co., Hale 1, 16-16-6e	¶32½	2460
H. Lindow 1, 16-16-6e	*	2475
UNION PARISH—		
Greenwood Prod. Co., Guinn A-1, 32-21-3e	¶9/10	2185

SOUTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
HACKBERRY—		
Rex Pet. Co., J. H. Duhon 1	*	3800
HAGER DOME—		
The Texas Co., Iberville Ld. Co. 1	*	6761
LOCKPORT—		
Union Sulphur Co., Moss 1	450	4810
PORT BARRE—		
Gulf, Godet 3	*	3960
STARKS—		
Texas Gulf Sulphur Co., Lutcher-Moore 15	*	1585
VINTON—		
Marrs McLean, Gray 4, dd	*	1940
WISNER—		
Gulf, City of New Orleans 1	*	6380

TEXAS

TEXAS GULF COAST

Company, Well and Location	Initial Production Bbls.	Depth
BIG CREEK—		
Gulf, T. W. Davis 21, dd	1350	3600
CLAY CREEK—		
Sun Oil Co., Draeger 1	*	1280
GOOSE CREEK—		
South Shore Oil Co. (J. M. West, Tr.), Scorrega 3, dd	*	6970
HUMBLE—		
Humble, Williams 11	450	4836
The Texas Co., Landslide 271	750	4885
LOST LAKE—		
Pure, Lost Lake 4	*	4479
PETTUS—		
Morgan et al, McKinney 1, Habbermacher sur, Bee County	¶25	3891
PIERCE JUNCTION—		
Rio Bravo Oil Co., Settegast A-13, dd	*	3680
REFUGIO—		
Houston Oil Co., Doughty 1, blk 23	75	5472
Tom Heard 1, blk 16	100	5470
Rooke 14	250	3699
E. M. Jones, J. F. B. Heard 1-A	500	3666
Stroube & Stroube, Cable 1	500	3684
Independent O&G Co., Claud Heard 4	750	3695
Claud Heard 5	750	3693
SARATOGA—		
Rio Bravo, Cotton 82-B	4	400
SOUR LAKE—		
Minor Oil Co., Fee 87	10	780
SPINDLE TOP—		
Rio Bravo T. & N. O. 52, dd	130	3000
Yount-Lee Oil Co., McFadden 3, dd	*	3000
McFadden 61, dd	30	3000
McFadden 89, dd	1550	3060
McFadden 124	*	2730
McFadden 129	1700	4090
McFadden 130	140	2620

TEXAS PANHANDLE

Company, Well and Location	Initial Production Bbls.	Depth
CARSON COUNTY—		
Champlin Ref. Co., McConnell 5	35	3174
Empire Gas & Fuel Co., O. L. Thorp 1	*	3952
Osborne et al, Percival 3	†	3050
Ryan Consolidated Oil Co., Block 8	175	3126
Skelly Oil Co., H. Shafer 21	40	3140
DONLEY COUNTY—		
Bluebonnett Oil Co., W. J. Ball 1	*	3005
GRAY COUNTY—		
Empire Gas & Fuel Co., Castleberry 1	45	3355
Gulf Prod. Co., Coombs-Worley 1	300	2906
J. M. Saunders 4	690	3081
Magnolia Pet. Co., J. E. Wright 6	1050	2860
McAuley et al, Morse 3	225	2583
Travis & Reiger, Mackie 1	¶19	3360
Wilcox O&G Co., Coombs-Worley 13	3650	2814
HUTCHINSON COUNTY—		
Dixon Creek Oil Co., R. F. Cheatham 1	800	3076
MOORE COUNTY—		
Operators Royalty Co. & Dana O&G Co., C. R. Jones 1	¶20-200	3410
WHEELER COUNTY—		
Murchison-Fain-McGaha, I. Close 11	¶5	1510

NORTH TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
ARCHER COUNTY—		
Lester Burns et al, Fails 4	260	1374
Consolidated Oil Co., Harmel 3	60	1442
F. P. Cullum et al, Falls Co. 7	55	1142
Pastusek 1	*	1475
Golding & Cochran, Phillips 2	*	1220
Tom Hunter et al, Morrison 1	*	1301
D. O. Johnson et al, Hamilton 1	*	1206
Lawson-Duke et al, Young 4	*	1475
Lomax & Lincoln, Garvey 1	*	1556
J. H. Massie et al, Richardson 8	150	1369
Pandem Oil Corp., Young 7-D,	175	1406
Shappell Oil Co., Jackson 48	*	1808
Prideaux 18	*	685
E. J. Stump et al, White 1	*	1650
L. E. Trout & Julian O&R Co., Lyles 1	*	1752
Underwood Drlg. Co., Ward 1	*	1301
BAYLOR COUNTY—		
Consolidated Oil Co. et al, Portwood 15	250	1401
Grisham & Barnsdall Oil Co., Portwood-Harry 2	200	1400
MONTAGUE COUNTY—		
Arco Oil Co., Salmon 2-E	200	1702
Bridwell Oil Co., Dennis 3	70	1716
WICHITA COUNTY—		
United Producers Co., Hodges 14-A	80	1769
YOUNG COUNTY—		
Atlantic Oil Prod. Co., Keen 1-B	10	902
Benson Bros. et al, Jeffrey 1	*	918
P. C. Brashear et al Leberman 1	*	1052
Cato & Hammon, Minor 1	240	1070
Christie Bros. et al, Kisinger 1	*	2597
P. K. Deats et al, Barnett 1	*	732
J. M. Dunn et al, Doyle 2	*	1102
J. L. Elliott et al, Howard 1	*	1040
Fain-McGaha Oil Corp., Fee 1	155	1075
Flowers & Barkley, Swetlich 1	*	1301
Tom Hunter et al, Benson 2	15	1080
Doyle 1	180	1082
Moran Drlg. Co., Larimore 1	*	705
Morris & Dunn, Routin 1	*	818
A. H. Parks et al, Hall 2	50	892
Perkins & Cullum, Dunagan 4	275	1079
Dunagan 5	230	1072
Dunagan 7	300	1079
Petroleum Prod. Co. & Madden, Deitrich 6	*	1202
E. R. Riggs et al, Andrews 1	*	938
Riner & Omohundro, Keith 2	15	674
E. H. Sharp et al, Edwards 3	20	1217
Shell Oil Co., Kisinger 1	195	2573
W. A. Stafford et al, Balding 1	*	752
Texas Co. & Consolidated Oil Co., Carpenter 2	*	1005
T. P. Coal & Oil Co., G. L. Donnell 7	40	4198
L. V. Wood et al, McKinney 1	*	1206
Wootten & Reed, Wilson 1	*	898

CENTRAL WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
CALLAHAN COUNTY—		
Culberson Bros. et al, Alexander 1	*	1417
Prairie O&G Co., Kelton 1	*	814
COLEMAN COUNTY—		
Anzac Oil Co., McAdams 2	*	320
Atlantic Oil Prod. Co., Overall 3-B	*	2187
Continental et al, Overall 16	*	2525
Lloyd Oil Corp., Bartholomew 8	35	1439
McCamey & Whitfield, Overall 3	*	1515
Syndicated Oil Co. et al, Miller 1	*	3075
COMANCHE COUNTY—		
Sun Oil Co., Unit Plan, Bryson 2	*	2995
PALO PINTO COUNTY—		
Brazos River O&G Co., McAvoy 1	¶3	1379
SHACKELFORD COUNTY—		
Hope O&G Co., Newell 1	*	1778
E. R. Mount et al, Lones 1	*	903
Phillips Pet. Co., Parrish 10	*	2185
STEPHENS COUNTY—		
W. J. Rhoades et al, West 1	20	2136

CENTRAL EAST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
VAN ZANDT COUNTY—		
Pure Oil Co., Cannon 1	5000	2876
Ellison 1	500	2869
Pure & Hill-Hill, Peters 1	500	3023

T-I-W Rotary Friction Slips

Will not cut or swedge pipe

Note in the illustration that there are no teeth to sharpen. The rings you see in the picture are not teeth, but mud rings three-eighths of an inch wide O.D. and one-fourth of an inch wide where they come in contact with the pipe.

That these slips will not injure pipe has been proven by long experience by major oil companies and contractors. Strings of drill pipe have been handled by these slips in a half dozen wells as deep as five and six thousand feet without the slightest cut or bruise, not even on the grey-hounds; and the slips were in just as good condition as the day they left our plant.

No teeth to resharpen Gives longer life

Due to the fact that there are no teeth to resharpen, and to accurately machined construction from the very best heat treated steel, these slips, according to conservative estimates of users, are built to outlast several pairs of other makes.

Fishing jobs are eliminated where other slips cut and crush the pipe. T.I.W. Slips are fourteen inches long. Their three-piece construction provides a uniform grip around the pipe for a distance of twelve inches. Made in all sizes.

Faster and Easier to Handle

One man can easily handle these slips as they are light and assembled in one piece.

All segments are held evenly when engaged with the pipe. They are easy to put in rotary when pipe is not hanging true. It is not necessary to pry pipe over with a bar.

Write for information.

TEXAS IRON WORKS
SALES CORPORATION

1401-1423 *Maury Street* HOUSTON, TEXAS

PERMITS GRANTED FOR NEW WELLS

ARKANSAS

JOHNSON COUNTY—Ark-La. Pipe Line Co., S. C. Cline et al 1, 16-10-24, 660 ft s and 660 ft w ne cor. ne¼ se¼.

OUACHITA COUNTY—Reynolds & Berg, Co., Reynolds & Gerg 4, 27-15-15, 300 ft s 180 ft w ne cor. se¼ sw¼.

UNION COUNTY—The Pure Oil Co., J. Merriweather 2, (aban.) 6-16-15, 2890 ft s and 3710 ft w of ne cor.

CALIFORNIA

ELWOOD — Elwood Exploration Co., No. 90-3, 22-4-29; No. 90-4, 22-4-29.

FRUITVALE — George F. Getty, Inc.'s, Fairhaven 1, 23-29-27.

KERN RIVER—Standard Oil Co., No. 23, 15-28-27.

KERN COUNTY—J. Benson Wren et al, No. 1, 32-25-17.

LONG BEACH—Cumming Pet. Ltd., No. 1, 29-4-12. Dabney-Johnston Oil Corp., No. 57, 24-4-13, A. L. Paine, Trustee, No. 1, 29-4-12. Safeway Oil Co., Ltd., No. 1, 13-4-13. Signal Oil & Gas Co., Signal-Goodyear 1, 29-4-12. Ball & Barnes, Ltd., No. 1, 13-4-13. Glengarry Pet. Co., Ltd., McMarr 1, 24-4-13.

LOMPOC — Vaqueros-Major Oil Co., Ltd., No. 1, 6-7-33.

MT. POSO—Pacific-Western Oil Co., King 6, 22-27-28.

PLAYA DEL REY — Barnsdall Oil Co., Burks 1, 21-2-15.

ROUND MOUNTAIN — George F. Getty, Inc., Jewett 1, 19-28-29. Shell Oil Co., Jewett 3-3, 19-28-29.

SANTA CRUZ COUNTY—Alan W. Rispin, No. 1, 14-11-2.

SUNSET—California Western Oil Co., Havenstrite 6, 17-11-23.

KANSAS

BUTLER COUNTY — Empire Oil & Ref. Co., Brandenberger 8 "A" ne se ne 22-27-5e; Elam et al, Hopkins 1, se sw se 26-23-4e.

COFFEY COUNTY—Hagberg et al, Bahr 1, se c, 24-22-13e.

COWLEY COUNTY—Lewis Prod Co., Fitzgerald 2, ne nw sw 20-31-6e.

COVE COUNTY—Valerious Oil & Gas Co., et al, 1, nw c 24-13-27w.

GRANT COUNTY—McKenna et al, Sullivan 1, ne c 12-20-38w.

GREENWOOD COUNTY—Independent O. & G., Sheppard 13, sw se sw 2-22-10e; Alladin Pet. Co. & Phillips Pet. Co., Jones 2, ne se nw 36-24-10e; Theta Oil Co., Pixlee 2, sw ne sw 9-22-10e.

HARVEY COUNTY—Gypsy Oil Co., et al, Hege 1, se nw se 13-22-2w.

MARION COUNTY—Youker et al, Riffel 2, sw se se 10-17-4e.

McPHERSON COUNTY—Sinclair O. & G., Voshell 4, (owdd) nw c 10-21-3w; W. C. McBride Inc., Krehbiel 2, ne sw ne, 4-21-3w; W. C. McBride Inc., Krehbiel 1, se sw ne 4-21-3w; Gypsy Oil Co., Stucky 1, se sw se 33-20-3w.

MORTON COUNTY — Hydraulic Oil Co., Butts 1, ne c se 22-34-43w.

RUSSELL COUNTY — Austin Oil Co., Rickefeller 1, se c 6-13-12w.

STEVENS COUNTY—Argus Gas Co., Asher 1, c nw 7-25-37w; Argus Gas Co., Barrown 1, c sw 32-34-38w.

SUMNER COUNTY — Harris and Haun, Welch 1-A (owdd) sw sw se 9-34-1e; Shawver et al, Curry 2, c nw sw 26-34-2e.

LOUISIANA

BOSSIER PARISH—Arkansas Fuel Oil Co., Shreveport, Lacy F. Barnett A-2, 25-23n-12w, 330 ft n and 330 ft w of se c w½ of se of se; Lacy F. Barnett B-2, 36-23n-12w, 330 ft n and 330 ft w of se c nw of ne; O. J. Kilgore B-8, 31-23n-11w, 300 ft n and 496 ft e of sw c nw of ne; *W. R. Ramsey 1, 31-23n-11w, 557 ft s and 330 ft e of c of Sec. Louisiana Gas & Fuel Co., Shreveport, Crystal Oil Ref. Co., 1, 7-21n-11w, 660 ft n and 1320 ft w of se c sw of se; Thigpen-Herold 6, 13-17n-12w, 660 ft s and 1980 ft e of nw c of Sec. The Texas Co., Shreveport, J. W. Wilkinson 7, 36-23n-12w, 990 ft n and 990 ft e of c of Sec.

Tabulation and Comparison on Page 76

CADDO PARISH—D. C. R. Oil Co., Inc., Shreveport, W. P. & P. D. Oden 1, 18-19n-14w, 330 ft s and 330 ft w of ne c of sw. Falcon Oil Co., Inc., Shreveport, Muslow 3, 29-20n-15w, 1220 ft s and 1070 ft w of ne c of Sec. Gulf Ref. Co., of La., Shreveport, Levee Board A-27, 34-21n-16w, 2005 ft s and 200 ft w of ne c of nw. Mr. P. T. Mize, Oil City, La. Oil Ref. Co., A-1, 6-20n-15w, 662 ft n and 175 ft e of sw c of Sec. The Texas Co., Shreveport, Leonard Fee 2, 29-20n-15w, 1520 ft w and 900 ft s of ne c of Sec. Tholl Oil Co., Beaumont, Bashara 12, 23-21n-15w, 300 ft s and 100 ft w of ne c of nw.

CAMERON PARISH—Moon Oil Co., Lake Charles, Sanner 5, 28-12s-10w, 1730 ft w and 575 ft e of sw c of Sec.

CONCORDIA PARISH — A. C. Glassell, Shreveport, Pittsfield Plantation 1, 41-8n-10e, n 9° e 1320 ft from sw c of Sec.

DE SOTO PARISH—Mr. R. O. Roy, Shreveport, I. Whitaker 1, 5-13n-13w, 330 ft s and 330 ft e of nw c sw of ne.

IBERIA PARISH—Lake Oil Corp., Crowley, Swamp-Ben White 1, 54-12s-7e, 1080 ft n and 240 ft e of sw c of Sec.

NATCHITOCHES PARISH — Mr. W. M. Coats, El Dorado, Collins 1, 28-9n-10w, 730 ft n and 50 ft e of c of Sec.

OUACHITA PARISH—Carbons Consolidated, Inc., Monroe, Guthrie 5, 50-20n-4e, 6634 ft n and 7078 ft w of c of Secs. 49, 26 and 25 in Sec. 50.

RED RIVER PARISH—Lucas & McNeill, Houston, La. Delta Pecan Orchard Co., 1, 34-13n-11w, 2600 ft s and 450 ft e of nw c of Sec.

RICHLAND PARISH—Franklin Oil & Gas Co., Monroe, Thomason 1, 14-16n-6e, 660 ft n and 165 ft w of se c of ne. *Industrial Gas Co., Shreveport, Alexander 1, 4-16n-6e, 172 ft n and 757 ft e of sw c of se. Pelican Natural Gas Co., Monroe, M. Chapman 1, 14-16n-6e, 660 ft n and 660 fe e of sw c of Sec. United Carbon Co., Monroe, Landers 1, 3-15n-6e, 1320 ft s and 660 ft e of nw c of Sec.

SABINE PARISH—Mr. J. M. Burnham, Ft. Worth, C. J. Bolin 2, 31-8n-12w, 442 ft e and 275 ft n of sw c of ne. Central Petroleum Co., Baton Rouge, Baptist Church 1, 31-8n-12w, in Lot 2, Block 3 of Zwolle Townsite. Johnson & Jones, Shreveport, R. E. Pearson 1, 31-8n-12w, 65 ft n and 185 ft w of se c of sw of nw of Sec. in Lot 6 of Tyler subdivision. H. H. McFann, Tr. & G. L. Pace, El Dorado, J. H. Reeves 1, 31-8n-12w, 581 ft e and 588 ft n of sw c of nw. Pelican Natl. Gas Co., Shreveport, La. Long Leaf Lbr. Co. 2, 20-7n-12w, 1320 ft s and 1313 ft e of nw c of ne. Mr. H. W. Perritt, Tr., Shreveport, M. Crow 1, 30-8n-12w, 150 ft n and 150 ft e of sw c se of sw of sw. Standard Oil Co. of La., Shreveport, A. B. Ives 2, 34-10n-12w, 330 ft n and 330 ft e of sw c se of sw.

*Amended permit.

OKLAHOMA

CLEVELAND COUNTY—Prairie, Sudik 1, nw c 5-10-2w.

CREEK COUNTY—Shell, Bruce 6, sw c ne, 10-17-9e. Cooney, Henry et al, Grayson 1, nw sw se, 10-17-9e. Pure, Roberts 1, (owdd) sw c, 30-17-9e. A. B. Ice Oil Co., Wanuka 6, nw c se, 19-17-10e. Sands Spring Home, Atkins 13, (owdd) ne sw nw 4-18-7e. Jackson and Wise, West 3, cwl se ne, 17-18-9e. Prairie, Bruce 2, se c nw, 10-17-9e.

HUGHES COUNTY—Producers & Refiners Corp. and Prairie, Gammil 1, nw sw nw 27-0-10e.

KIOWA COUNTY—I. D. Flannery, Reneau 3, se c 25-6-18w.

LINCOLN COUNTY—Coline Oil Co., Telford 1a, nw c se, 7-14-4e. T. B. Slick, Fee 1, ne c sw, 7-14-4e. Prairie, Norton 2, (owdd), nw sw ne, 7-14-4e. Prairie, Norton 3, sw c ne 7-14-4e (twin). Magnolia, Benedict 1, (owdd) se c nw 7-14-4e.

LOVE COUNTY—Harry Hobbs, Steele 1, sw c ne ne sw, 20-6s-3w.

MARSHALL COUNTY—J. D. Loofborrow, Kraueer 1, nw c sw, 25-5s-5e. M. L. Wheeler, Taylor 1, ne c nw nw, 8-7s-6e. Bilbo Oil Trust Co., Taliaferro 1, ne c sw ne se, 14-5s-5e. F. W. Merrick, Null 17, se c nw nw 24-5s-5e.

MUSKOGEE COUNTY—Midwestern O&G, Mulkey 1, c nw nw 31-12-19e. Mack Drilling Co., McDaniels 1, sw c nw se, 33-16-15e. Bryan Pet. Co., Barnett 10, csl se ne 8-15-15e. Hersha and Delaney, Ware 1, ne c sw, 8-15-15e. M. S. Mussellem, Stedham 1, ne c nw, 18-15-18e. E. A. Hallis et al, Rentie 1, sw c ne sw se 9-15-18e. J. L. Haner, Stedham 5, ne c se, 8-15-18e. The Francis Corp., Manuel 2, ne c se se 18-15-17e. C. D. Bradley, Sango 1, ne c se, 12-15-17e.

OKFUSKEE COUNTY—Superior Oil Co., Palmer 1, (owdd) nw c se, 23-12-11e.

OKLAHOMA COUNTY — Phillips, T. B. Slick and Prairie, Sigmon 3, nw sw sw, 32-11-2w. Phillips, T. B. Slick and Prairie, Sigmon 4, sw c, 32-11-2w. Sinclair, School land 16, se sw ne, 37-11-3w. I. T. I. O. et al, Corff 1, se c sw, 11-11-3w. Jones Drlg. Co., Sullivan 1, ne nw sw 1-11-3w. Phillips, Trader 1, sw c, 36-12-3w.

OKMULGEE COUNTY—Denton and Marshall 1a, Colbert, se c nw sw 14-14-14e. Sunray Oil Co., Palmer 2, ne sw sw 29-13-12e. L. M. Smith et al, Chapman 1a, sw c nw sw ne 16-12-12e.

OSAGE COUNTY—Devonian Oil Co., 2, sw ne ne ne 25-21-9e. Union Oil & Mingin Co., 4, nw se nw 32-23-10e. Peters Pet. Co. and Producers & Refiners Corp. 4, sw se ne, 10-26-8e.

PAWNEE COUNTY—Martin et al, Cotton 2 (owdd) nw c se sw, 6-20-8e. Cy Marshall et al, Lucas 7, (owdd) ne c nw sw 6-20-8e.

PAYNE COUNTY—Home Gas Co., Kirk 3, (owdd) se ne nw, 6-17-4e.

PITTSBURG COUNTY — Central States Light & Power Co., Bascum 1, se c sw se 10-7-18e. Rogers et al, Brown 1, ne c se 9-7-18e. Midwestern O&G , Carney 1, c s½ nw ne 9-7-18e.

POTTAWATOMIE COUNTY—Twin State Oil Co., Archer 1, ne c se, 22-6-3e. I. T. I. O. Butler 1, sw c nw, 23-6-3e; Wilcox O&G, Atkins 1, nw c sw, 23-6-3e.

SEMINOLE COUNTY—E. L. Harris, Burgess 1, ne c ne, 29-6-6e; E. L. Harris et al, Chupco 2, sw ne se 20-6-6e; McCulloch Oil Co., Roberts 3, sw nw nw 16-6-6e; Barnsdall, Lusty 3, se sw ne, 13-5-7e; Mid-Continent Pet. Corp., Smith 19, se nw ne 5-7-7e; W. B. Pine, Bean 4, se ne sw 13-7-6e; Barnsdall, Factor 2, ne nw se 13-7-6e; Amerada, Ground 4, nw sw nw, 23-9-5e; Amerada et al, Edwards 4, ne se ne 22-9-5e; Twin State Oil Co., Grisso 1, sw ne nw, 32-10-6e; Amerada and Dixie, Alexander 1, se ne se 36-10-5e.

TILLMAN COUNTY — Bridwell Oil Co., Pautchee 1, ne c se 4-4s-16w.

TEXAS

ARCHER COUNTY—Mrs. H. B. Wallace, Wichita Falls, Fee 160, 40 sw of Sec 6, 332 ft n of 24. C. P. Burton, Wichita Falls, L. F. Wilson 1, Wm. Walker sur, 150 ft from n and 6470 ft from w line.

BAYLOR COUNTY — Morrison & Thorn, Seymour, Wm Warren, 80, 1, C. Bell sur, 150 ft from n and e lines. C. T. Porter, 80, 1, A. Barker sur, 3334 ft from w and 174 ft from n line.

BANDERA COUNTY—Sun, Dallas, F. E. Wisenhunt, 1, Sec 69, 500 ft from e and 900 ft from s line.

BROWN COUNTY—G. P. Mitcham, Cisco, Terry, 40, 1, S 39, S. P. Ry sur, 150 ft from e and 350 ft from s line.

BROOKS COUNTY — Houston Oil Co., Houston, A. R. Holbein, 1, A. Pena sur, 200 ft from n and 600 ft from e line. Miller and

Albrecht, Edinburg, G. B. Garcia, 250, 1, Al La Mestena sur, 1500 ft from w and 250 ft from s line.

BEXAR COUNTY — Swearingen Oil Co., San Antonio, Fee, 100, 3, 52, 150 ft from n and w lines.

CALLAHAN COUNTY—Lewis Prod. Co., Dallas, M. Alexander, 80, 1, S 23, E. T. Ry. sur, 150 ft from s and e lines.

CALDWELL COUNTY—Humble, Houston, T. Briscoe, 56, 6, J. Hinds sur, 1050 ft from w and 450 ft from n line. Buchanan & Danciger, San Antonio, W. T. Cude, 21, 2A, W. M. Spillers sur, 150 ft from n and e lines. Humble, Houston, W. H. New, 85, 3, J. Hinds sur, 150 ft from n and 1836 ft from w line.

CARSON COUNTY—Red River Gas Co., Amarillo, Bivins, A, 640, 4, S 44, B M20, G. & M. sur, 660 ft from s and e lines of ne. Cities Service, Pampa, Fuqua, 640, 2, S 18, B 3, AB&M sur 330 ft from s and e lines of nw¼.

CHAMBERS COUNTY—Mills Bennett & Gulf, Houston, Fisher, 25, 1, Wm. Bloodgood sur, 500 ft from n and 50 ft from w line. McAlbert Oil Co., Houston, E. F. Woodward, 5, 5, W. H. Hodges sur, west of 4.

CRANE COUNTY—Gulf, Houston, J. T. McElroy, 609, 75, S 201, B F, CCSD&RGNG sur,, 1442 ft from n and 330 ft from w line.

DENTON COUNTY — Leslie Spoonts & Owen Sloan Oil Co., Fort Worth, G. E. Light, 1280, 1, Jos. Harris sur, 377 vs from e and 897 vs from s line sur.

DE WITT COUNTY—Republic Prod. Co., Houston, F. T. Clark, 788, 1, Jose Santos sur, 1450 ft from e and 7500 ft from s line. Louisiana Oil & Refg. Co. & Darby Pet. Co., San Antonio, W. Keawemann, 101, 1, R. Galetty sur, 400 ft from n and w lines.

ECTOR COUNTY—Cosden Oil Co., Fort Worth, Univ. C, 80, 1, S 1, B 35, Univ. sur, 440 ft from w and 2310 ft from w line; Univ. B, 80, 3, S 2, B 35, Univ. sur, 1320 ft from e and 2310 ft from n line. Gulf, Houston, State, 160, 3, S 1, B 35, Univ. sur, 880 ft w of 1. W. E. Connell, 160, 1, S 1, B B16, Univ. sur, 440 ft from e and 330 ft from s line ne¼. State A, 160, 3, S 2, B 35, Univ. sur, 880 ft w of 1.

ERATH COUNTY—R. C. Payne, Breckenridge, C. F. Morton, 80, 1, N. P. Browning sur, 200 ft from e and 1700 ft from s line.

FREESTONE COUNTY—Simms Oil Co., Dallas, P. McGeorge, 500, 1, S. T. Ballou sur, 450 ft from n and 1130 ft from w line.

GLASSCOCK COUNTY—Snyder, Timberlake, Estes & Birchfield, El Paso, Meeke, 160, 1, S 7, B 34, T 3S, 2310 ft from e and 1650 ft from s line. Amerada, Fort Worth, R. C. Coffee, 80, 3, S 22, B 33, T&P sur, 330 ft from s and e lines. F. H. E. Oil Co., Sherman, J. M. Sprinkle, 80, 1, S 163, B 29, W&NW sur, 330 ft from n and w lines of e½ nw¼.

GALVESTON COUNTY—Gulf, Houston, Geo. Smith, 200, 10, G. E. Smith sur, 1955 ft from nw and 1407 ft from sw line.

GRAY COUNTY—Cities Service, Pampa, Hexter, 640, 2, S 235, B B2, H&GN sur, center of se¼. D. R. Tripplehorn, 1612 Westmoreland, Fort Worth, J. E. Morse, 80, 1, S 1, B 26, H&GN sur, 330 ft from s and w lines of n½ ne. Texas Co., Wichita Falls, G. H. Saunders, 160, 17, S 3, B 1, ACH&B sur, 330 ft from n and e lines w½ se. Humble, Wichita Falls, P. Young, 480, 1, S 110, B 3, I&GN sur, 1320 ft from s and w lines of Sec. Combs-Worley, 80, 3, S 36, Blk 3, I&GN sur, 330 ft from s and e lines n½ se. Magnolia, Dallas, J. E. Wright, 120, 8, S 13, B 3, I&GN sur, 330 ft from n and w lines sw of sw. J. W. Wilson et al, Amarillo, Melton, 80, 1, S 95, B B2, H&GN sur, 330 ft from n and w lines e½ se¼. Phillips, Bartlesville, Okla., J. B. Bowers, 80, 1, S 63, B B3, H&GN sur, 330 ft from e and 990 ft from s lines e½ sw. J. E. Wood, 80, 3, S 13, B 3, I&GN sur, 330 ft from s and e lines of n½ sw.

GUADALUPE COUNTY — Mid-Kansas Oil & Gas Co., Shreveport, J. J. Waldrip, 342, 2, Geo. Allen sur, 1200 ft from e and 900 ft from s line.

HARRIS COUNTY — Cranfill & Reynolds, Dallas, V. T. Rorock, 1, J. C. Ogburn sur, 50 ft from n and e lines. Strang Pet. Corp., Houston, J. W. Good, 230, 1, E. Brinson sur, 68 ft from w and 112 ft from s line Lot 28.

HARDIN COUNTY — Rio Bravo Oil Co., Houston, Fee, 158, C82B, J. E. Cotton sur, 4 ft s of C82A.

HOWARD COUNTY—Owen-Sloan Oil Co., Forsan, W. J. Flowers, 160, 1, S 42, B 31, T&P center of ne¼.

HUTCHINSON COUNTY—Texas Co., Pampa, Cockrell, 80, 1, S 4, B 23, BS&F sur, sw c of nw. Phillips Pet. Corp., Bartlesville, Okla., Cart, 160, 1, S 1, B Y3, TT Ry sur, 1320 ft from n and 990 ft from e line ne¼.

JONES COUNTY—Phillips, Bartlesville, Okla., J. N. Teaff, 1, S 38, B 17, T&P sur, 1100 ft from e and 990 ft from s line of Sec.

JACK COUNTY — Robt. Watchorn, Oklahoma City, Okla., S. E. Maxey, 120, 8, C. Robbins sur, 1170 ft from w and 750 ft from s line.

KAUFMAN COUNTY—R. H. Sowell, Dallas, A. H. Ables, 45, 1, E. Ables sur, 750 ft from s and w lines.

MILAM COUNTY—Service Oil & Gas Co., Beaumont, G. M. Ward, 92, 2, L. Taylor sur, 150 ft from s and e lines. Kyser, Roberts & Dibble, Marlin, Mrs. B. Ward, 100, 1, L. Taylor sur, 1000 ft from e and 216 ft from s line. Groneman Bros., Rockdale, R. VonGunton, 97, 1, M. G. Delgado sur, 150 ft from w and 1050 ft from s line.

PECOS COUNTY—Humble, McCamey, H. L. Kokernot, 640, 1, S 227, B B10, GH&SA sur, 1320 tt from n and 1467 ft from w line Sec. R. W. Purpus, Fort Stockton, Oil Land Corp., 640, 1, S 28, B 1, W. T. C. Ry sur, 330 ft from s and w line ne. Dixie Oil Co., Inc., McCamey, J. H. Tippett, 1, S 61, B 194, GC&SF sur, 150 ft from n and 980 ft from e line. Gulf, Fort Worth, I. G. Yates, 30, Runnels sur, 2330 ft from w and 3300 ft from s line Sur.

PALO PINTO COUNTY—McLester Oil Co., Eastland, A. P. Wilbur, 1, J. Latham sur, 2000 ft from n and 3500 ft from e line. Jack Dalton Oil Co., Fort Worth, R. S. Dalton, 10, 8, 1789 TE&L sur, 1050 ft from n and 755 ft from w line of Sec.

POTTER COUNTY — Canadian River Gas Co., Amarillo, Bivins, A, 640, 12, S 7, B 018, D&P sur, 660 ft from n and e lines of Sec.

REFUGIO COUNTY—T. P. Morgan, San Antonio, T. J. O'Connor, 63, 1, Blk G, Lot 1, 150 ft from s and w lines; 2, 150 ft from n and 508 ft from w line; 3, 150 ft from n and 822 ft from e line; 4, 150 ft from n and 1282 ft from w line. St. John, 67, 1, Blk 12, Refugio sur, 150 ft from n and w lines.

SHACKLEFORD COUNTY—W. E. Mashburn, Moran, J. Crow, 160, 1, S 17, L. A. L. sur, 760 ft from n and e lines. Mrs. L. D. Hall, Mineral Wells, B. S. Walker, 20, 1, J. Malone sur, 150 ft from s and w lines. Leggie & Arendt Oil Co., Alany, J. Blach, 320, 11, 339 TE&L sur, 210 ft from nw and 168 ft from ne line. L. B. Tannehill, Albany, W. P. Newell, 409, 29, S 11, B 11, T&P sur, 200 ft from e and 160 ft from s line Sec. Dickey Oil Co., Cisco, E. Webb, 320, 1, 576 TE&L sur, 1800 ft from nw and 870 ft from ne line. Roeser & Pendleton & Humble, Albany, Morris-Buie 1, Sec 191, E. T. Ry sur, 220 ft from s and w lines of Sec. Morris-Buie, 1, Sec 201, E. T. Ry sur, 220 ft from s and e lines of sw.

THROCKMORTON COUNTY—Alex Sommer & Son, Woodson, J. R. Little, 80, 1, 699 TE&L sur, 150 ft from s and w lines of Sec. Young Bros. & Alexander, Fort Worth, H. C. Welch, 30, 7, 907, TE&L sur, 250 ft sw of 3. Mozzle Oil Corp., Eastland, J. E. Hughes, 80, 7, 902 TE&L sur, 300 ft n of 5; 6, 300 ft w of 3; 5, 350 ft of 2. Proy & White, Breckenridge, Reynolds, 40, 1, Sec. 72, A. Foster sur, 300 ft from s and e lines of Sec.

VAN ZANDT COUNTY—Grand Saline Oil Co., Dallas, W. J. Carnes, 588, 1, 283 T.P. Ry sur, 200 ft from s and w lines. L. G. Priest, Fort Worth, B. Blewtett, 84, 1, E. Porter sur, 175 ft from s and e lines of Blk 18.

WICHITA COUNTY—H. A. O'Neil, Wichita Falls, Davis, 6, 1, B 6, Burkburnett sur, nw corner. King & Daniel, Wichita Falls, J. W. Ferguson, 60, 5, J. W. Robinson sur, 825 ft from w and 150 ft from s line. Ringer & Omohundro, Wichita Falls, D. R. Pace, 40, 24, 255, R. J. Scott sur, 300 ft e of 23. Continental, Wichita Falls, T. J. Waggoner, C, 160, 6, H. George, 200 ft from n and 150 ft from w line, Blk 8. Ascot Co., Wichita Falls, W. W. Overby, 50, 6, J. M. Sharpe sur, 75 ft n of 5.

WILLIAMSON COUNTY—Fred Beatty, Thrall, Mrs. A. Pumphrey, 40, 1, W. Cartwright, 150 ft from n and w lines. E. L. Chapman, Fort Worth, A. Schram, 100, 1, W. West sur, 150 ft from s and w lines. J. C. Abbott, B 14, 2, S. Miller sur 150 ft from s and w lines; 3, 300 ft e of 2; 4, 300 ft ne of 3.

WARD COUNTY—Gulf, Fort Worth, G. W. O'Brien, 640, 9, S 16, B F, G&M sur, 330 ft from n and e lines of Sec.

WILBARGER COUNTY—Venmex Oil Co., Wichita Falls, W. T. Waggoner, 80, A1, S 8, B 4, H&TC.

WASHINGTON COUNTY—Sun, Dallas, G. F. Grote, 75, 9, N. Clay sur, 100 ft se of 8.

YOUNG COUNTY—Pitzer & West, Breckenridge, W. W. Williamson, 160, 1, 458 TE&L sur, 335 ft from n and w lines of nw.

ZAVALA COUNTY—Cribbs & Davidson, Crystal City, C. G. Callicut, 191, 1, S 44, L. E. H. Spaulding center.

ZAPATA COUNTY—Killam & Duggan, Laredo, R. B. Cuellar, 640, 15, S 278, nw corner.

COMPLETIONS

(Continued from page 116)

WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
ECTOR COUNTY—		
Cosden Oil Co., Kloh 1	820	3722
Humble-Penn-Atlantic, R. L. York 5	815	3730
R. L. York 6	385	3746
Simms Oil Co. & Phillips Pet. Co., University 1	850	3670
HOWARD COUNTY—		
American-Maracaibo Co., Settles 2-D	150	2560
Continental Oil Co., Clay 4-E	40	1757
Humble O &R Co., H. R. Clay 9	*	2946
PECOS COUNTY—		
Cardinal Oil Co., Toborg 7	500	420
Dixie Oil Co., Toborg 4	250	425
Gulf Prod. Co., Yates 28	25	1264
Yates 29	1480	1436
WARD COUNTY—		
Gulf Prod. Co., Hutchings 3	90	3095
Sid Richardson - Kelsey - Magnolia, O'Brien 1	180	2686

SOUTHWEST TEXAS

DUVAL COUNTY—		
Driscoll, Fee *11, Sec. 448	800	2890
GUADALUPE COUNTY—		
Trinity Drillers, J. M. White (in chalk)	*	2218
DARST CREEK—		
Magnolia, M. E. Roamell 2, s offset to 1	1200	2577
Richburg 2 (in Serpentine)	400	2535
La. Oil Ref. Corp., T. Dix 3, e offset gusher	3300	2577
Empire, Dowdy 4	200	2620
ZAPATA COUNTY—		
O. W. Killam, Cuellar 15-C, Sec. 278	300	1563

Osage, Wyoming.—A considerable activity is noted in the Osage field, near this town, where recently much better production has been discovered in a northwest extension to the old shallow proved area. Another small refinery for the field is being erected by B. V. Hole at the town of Pedro, a station on the Burlington railroad, several miles southeast of the field.

Major operators have made some effort to secure acreage in the field, but due to the fact that lease holders are asking such high prices for land there have been no trades to date, and independents continue to do all development work. There are six tests under way at present, and as many more are planned.

WILDCATS FROM ALL SECTIONS

WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
GLASSCOCK COUNTY—		
Continental Oil Co., Miller 1	*	2486
TOM GREEN COUNTY—		
Ellis et al, Lewis 2	*	456
Cosden Oil Co., J. Johnson 1	*	555
JONES COUNTY—		
Atkinson & Sandefer Oil Corp., E. M. Byron 1	*	2640
MENARD COUNTY—		
Carl Cromwell & Jas. Duffy, Winslow 2	*	3535
MIDLAND COUNTY—		
Pure Oil Co., J. E. Hutt 1 .....Junked		893
PECOS COUNTY—		
Continental Oil Co., Robinson-Bennett 1	*	1970

ANDREWS COUNTY—Deep Rock Oil Co. et al's A. R. King 1, elev 3206 ft, top salt 1698 ft, dr 3490 ft; B. L. King 1, elev 3196 ft, top salt 1700 ft, dr 3215 ft; W. J. Mathis 1, elev 3192 ft, top salt 1730 ft, set 8¼-in cas 2875 ft. Fuhrman Pet. Corp.'s Ford 1, elev 3186 ft, ur 10-in pipe 1370 ft. Humble O&R Co. & Penn. Oil Co.'s Wilson 1, dr 600 ft.

BORDEN COUNTY—Phillips Pet. Co. & C. B. Shaffer's Good 1, top salt 1400 ft, set cas with hfw 3625 ft.

BREWSTER COUNTY—E. L. Chapman et al's Skinner 2, elev 4240 ft, sd 1280 ft. Trans-Pecos O&G Co.'s Jones 1, elev 3073 ft, sd 2140 ft.

COCHRAN COUNTY—R. A. Westbrook & Co.'s Slaughter 1, elev 3793 ft, top salt 2347 ft, top lime 3837 ft, dr 5220 ft.

COKE COUNTY—Arkansas Fuel Oil Co. & Dixie Oil Co.'s Stepp 1, sd 950 ft. Lipan Oil Co. & Vernon O&G Co.'s Rawlings-Lackey 1, sd 3060 ft.

CONCHO COUNTY—Jas. Duffy & Watchorn O&G Co.'s Noyes 1, elev 1965 ft, sd hfw 1760 ft. A. W. Turner et al's Brosig 1, co 750 ft.

CRANE COUNTY—Cranfill Bros. Oil Co. & Gulf Prod. Co.'s Tubbs 1, elev 2526 ft, top salt 505 ft, dr broken lime-anhydrite 2310 ft.

CROCKETT COUNTY — California Co.'s Shannon 2, elev 2667 ft, top salt 1025 ft, dr 2330 ft. W. E. Doleman & E. H. Moore's P. Perner 1, rig. Magnolia's Hoover 1, elev 1412 ft, top salt 660 ft, top lime 1890 ft, water trouble 2980 ft. Trans-Texas Oil Co.'s Shannon 2, elev 2647 ft, top salt 1095 ft, dr 1890 ft.

CULBERSON COUNTY — Grisham-Hunter Corp.'s W. D. Garren 1, sd 1670 ft. Hickey et al's Finley 1, sd 2890 ft. W. L. Kornrumpf et al's Garren 1, sp and sd.

ECTOR COUNTY—C. P. Davis et al's Hendrick 1, dr 2025 ft. Gibson & Johnson's Scharbauer 1, elev 2986 ft, top salt 1220 ft, top lime 3380 ft, dr 3550 ft. Penn Oil Co. & Devonian Oil Co.'s Goodman 1, rig. Southern Crude Oil Pur. Co.'s Cowden 1, dk. TP Coal & Oil Co.'s McKenzie 1, top salt 1009 ft, dr anhydrite 3245 ft. H. F. Wurtz et al's Ibbetson 1, sp and sd.

EDWARDS COUNTY—Phillips Pet. Co.'s Holman 2, dr 2030 ft.

EL PASO COUNTY—Lane-Texas Co.'s W. D. Malone 1-A, sd 1500 ft.

FISHER COUNTY—Cranfill-Reynolds Co.'s Barrett 2, lcn; Flannigan 2, lcn; Johnson 1, elev 1843 ft, dr 2970 ft; Willingham 2, dr 1640 ft. Midwest Explo. Co.'s Decker 1, lcn. Roeser-Pendleton, Inc.'s Steele 1, lcn.

GAINES COUNTY—Humble O&R Co.'s Carswell 1, dr 645 ft.

GLASSCOCK COUNTY—California Co.'s C. F. Jones 1, dr 1875 ft. FHE Oil Co.'s Cox 1, dr 3175 ft; Sprinkle 1, dr 250 ft. Ed. Timberlake et al's Meek 1, elev 2792 ft, dr 2780 ft. World Oil Co.'s Edwards 1, elev 2538 ft, rig; McDowell 3-C, elev 2537 ft, lcn.

TOM GREEN COUNTY—Cosden Oil Co.'s Anson 1, lcn. Phillips Pet. Co.'s Jennings 1, dr 1470 ft. D. W. Wiley et al's Mayer 1, sd 620 ft.

HOWARD COUNTY—Laurel O&G Co. et al's Flowers 1, co 2517 ft. Meriwether Oil Co.'s Smith 1, elev 2590 ft, dr 2470 ft. Sinclair O&G Co.'s Montgomery 1, dr 510 ft.

HUDSPETH COUNTY — California Co.'s University 1, elev 5109 ft, dr gray lime 4410 ft.

IRION COUNTY—Cromwell et al's Nutt 2, dr 1320 ft. Kingwood Oil Co.'s Sugg 1, elev 2334 ft, pb from 7818 to 6700 ft, co after fifth shot. Straughn & Texannati Oil Co.'s Nutt 1, dr 500 ft. P. H. Williams et al's Ashe 1, elev 2726 ft, top lime 1712 ft, dr black lime and shale 8845 ft.

JONES COUNTY — Mid-Tex O&G Co.'s King 1, sd 1965 ft. Phillips Pet. Co.'s Teoff 1, rig.

LOVING COUNTY—California Co.'s Allen 1, elev 2730 ft, top salt 771 ft, dr 3675 ft; Reagan 1, elev 2725 ft, top salt 771 ft, dr 3080 ft. Dixie Oil Co. & Phillips Pet. Co.'s Johnson 1, lcn. Hadlock et al's Russell 2-A, rig. L. E. Lockhart et al's Wheat-Ramsey 1, elev 2689 ft, top salt 725 ft, dr 2415 ft. Lockhart & Co.'s Bowen-Wells 3, elev 2719 ft, top salt 763 ft, sd 3385 ft; Hubbard 5, elev 2695 ft, cem cas 4011 ft; Hubbard 6, Rig; Lepp 2, sp and sd.

MENARD COUNTY—L. G. Priest et al's J. P. Sorrells 1, dr 1625 ft.

MIDLAND COUNTY—Pure Oil Co.'s J. E. Hutt 1-A, jkd. 893 ft, skid 50 ft south.

PECOS COUNTY—Alexander-Lyles-Eastland Oil Co.'s Sellman 1, co 1730 ft. M. H. Black & Dittman Drlg. Co.'s Pecos Valley 2, set cas 1400 ft. California Co.'s Iowa-Jasper 1, dr 1230 ft. E. L. Chapman et al's Streety 1, elev 2653 ft, fsh 2200 ft. Cromwell-Tanner & Ellis' University 1, dr 1490 ft. Crosby Prod. & Roy. Co.'s Cordova 1, elev 2320 ft, top salt 725 ft, cas froze 2080 ft. Fisher & Lowrie's Webb 1, dr 275 ft. Hayes et al's Lea 1, lcn. Humble O&R Co.'s H. L. Kokernot 1, rig. Hussman Oil Co.'s Estes 1, fsh 1675 ft. Independent O&G Co. & Buell-Hagan's Jasper 1, dr 1370 ft. C. S. Messinger et al's Byrne 1, sd 710 ft. J. R. Miller et al's Bennett 1, sp and sd. R. E. Moore et al's Arnold 1, elev 3860 ft, sd 1925 ft. Perren et al's Eaton 2, bad hole 655 ft. Phillips Pet. Co.'s Shearer 1, elev 2426 ft, dr 1120 ft. R. W. Porpus et al's State 1, machine. Rector Oil Co.'s Young 1, elev 2380 ft, top salt 635 ft, trace oil 1620-30 ft, dr 2075 ft. Sides & Cloyd's Blackstone-Slaughter 1, top salt 860 ft, sd 1340 ft. Southern Crude Oil Pur. Co.'s Eaton 1, elev 2439 ft, top salt 1022 ft, testing 500 ft, oil in hole 1580-96 ft. The Texas Co.'s Wright 1, dr salt 2150 ft. Trees Oil Co.'s J. C. Trees 3, elev 2518 ft, sd 2080 ft. Transcontinental Oil Co.'s University 1, elev 2552 ft, top lime 1035 ft, bad hole 4910 ft. Transcontinental-Arkansas Fuel Oil Co.'s White-Baker 2, elev 2695 ft, top salt 875 ft, top lime 1715 ft, re-set cas 2075 ft; White-Baker 3, fsh 565 ft; M. Sellman 1-A, dr 810 ft; Tippett 1, set cas 895 ft. W. F. Walsh et al's Scharbauer-Henderson 1, elev 3325 ft, dr 1110 ft. Walsh-Sturm & Keller's Shearer 1, machine.

REAGAN COUNTY—Big Lake Oil Co.'s University 179 (Deep Test), fsh bit 2915 ft; University 1-C, dry hard gray lime 8634 ft; University 2-C, flow 584 bbls oil and 11,527,000 ft gas, td 8232 ft; University 3-C, flow 73 bbls oil and 2,217,000 ft gas 8576 ft; University 4-C, flow 125 bbls oil and 4,273,000 ft gas, td 8220 ft; University 5-C, dk. Group One Oil Corp.'s University 2-B, 122 bbls 62 grav oil and 13,164,000 ft gas, td 8131 ft; University 3-B, dr 6283 ft. A. M. Hagan-Emch & Amerada's Sawyer 1, top salt 995 ft, dr 2250 ft. Kemrow et al's Sawyer 1, dk.

REEVES COUNTY—Slack & Fink's Brooks-Huling 1, elev 3116 ft, co with 100 ft oil in hole after second shot 1820-31 ft, td 1860 ft.

RUNNELS COUNTY—Geo. W. Boyce & Lamar's Lange 1, elev 1844 ft, sd 2504 ft. Gibson & Johnson's Johnson 1, dr 2145 ft.

SCHLEICHER COUNTY—Delmar Oil Co.'s O'Harrow 1, dr 3215 ft. Phillips Pet. Co.'s J. A. Whitten 1, elev 2333 ft, cem cavey hole 6146 ft. Munger-Wilson Oil Co.'s Page 1, elev 2270 ft, sd 4710 ft. Paul Teas & Walter Gant's G. C. Allison 1, set cas 345 ft.

SCURRY COUNTY—J. G. Armand & Camp Springs O&R Co.'s Quinn 1-A, elev 2316 ft, sd 4140 ft. Byrd & Harmon's Murphy 1, est 7 bbls oil per hour 2350 ft. Pender O&G Co.'s Davis 1, co 4355 ft. Transcontinental Oil Co. & Vacuum Oil Co.'s Peckham 1, elev 2155 ft, ur 535 ft.

TAYLOR COUNTY — Condor Pet. Co.'s Stoker 1, rig burned, td 2580 ft. A. H. Gibson et al's Cody 1, testing 1500 ft, oil in hole at 2370-95 ft. J. B. Jameson et al's Webb 1, elev 1905 ft, dr 5845 ft. H. B. Herring-Hucony Gas Co. & Cordova Union's Richie 1, sp and sd. Owen-Sloan Oil Co. & Gibson-Johnson's Bingham 1, dr 1960 ft.

TERRELL COUNTY—Big Bend Oil Corp. & F. A. Book's Bassett 1, elev 2396 ft, dr 1840 ft. Transcontinental Oil Co.'s Good 1, elev 2405 ft, ur 3030 ft.

TERRY COUNTY — Penn Oil Co. Unit Plan's P. Carlisle 4, elev 3275 ft, top salt 2260 ft, sd for cable tools, td 3322 ft.

UPTON COUNTY—TP Coal & Oil Co.'s Belcher 1, elev 2684 ft, top salt 1310 ft, top lime 3620 ft, dr hfw 3850 ft.

VAL VERDE COUNTY—A. Blume et al's J. P. Yoas 1, lcn. Phantom Oil Co.'s Ingram 1, trace oil in bad hole 2970 ft.

WARD COUNTY—E. J. Anderson et al's Boogher-Merritt 1, top salt 825 ft, set cas 875 ft. C. C. Dearborn & Otto Kirkham's Boogher 1, top salt 840 ft, dr 890 ft. Gulf Prod. Co.'s Hutchings 4, set 12½-in cas 403 ft; O'Brien 8, dr 2435 ft; O'Brien 9, dr 460 ft. R. F. Owen et al's Johnson 1, sd 380 ft. Sid Richardson-Kelsey & Magnolia's O'Brien 2, dr 200 ft. Shell Pet. Corp.'s Sloan-Owen 1, elev 2516 ft, pb from 4415 to 3100 ft. Shipley Oil Corp.'s Hayzlett 4, dr 2980 ft. J. E. Smith et al's Clements 1, dr 725 ft. Sturm & Paine's Cummins 1, elev 2443 ft, top salt 780 ft, sd 2350 ft. Sun Oil Co.'s Sealy 1, elev 2680 ft, dr 2570 ft. Tex-Oil Production Co.'s Redman 1-A, elev 2717 ft, salt 1290 to 4133 ft, dr anhydrite 4855 ft.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet or gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in.—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—side-tracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

EAST CENTRAL TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
FREESTONE COUNTY—		
Penn Oil Co--Dixie Oil Co. et al, Burgher 1	*	4005
HILL COUNTY—		
Pure Oil Co., Sesulka 1	*	1105
VAN ZANDT COUNTY—		
Arthur Ray & Ward Powell, A. J. Berry 1	*	3508

ANDERSON COUNTY—Humble O&R Co.'s J. C. Collier 1, John Little sur, dr 175 ft. Sun Oil Co.'s Bowers-Maier 1, E. G. Meyers sur, elev 306 ft, top Pecan chalk 965 ft, fsh bit 1305 ft.

ELLIS COUNTY—G. C. Foster & S. C. Richardson's Moise-Cerf 1, LaPena sur, elev 440 ft, Austin chalk 531 to 814 ft, dr 1750 ft.

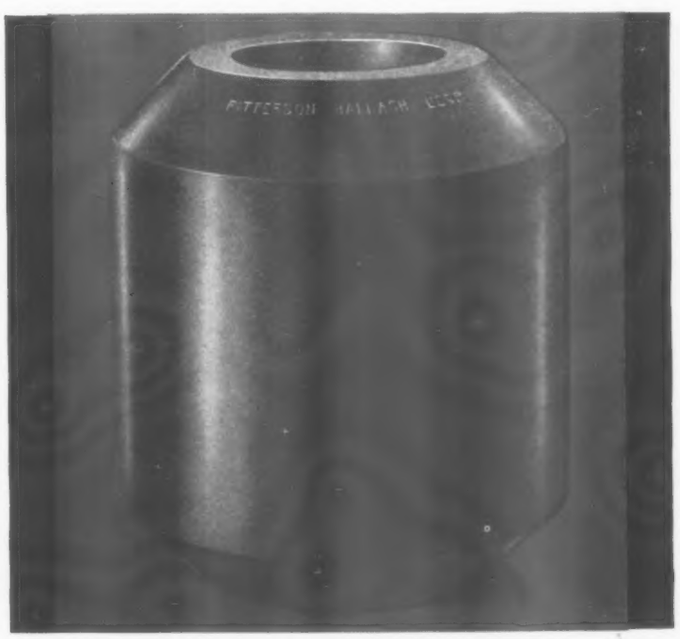
FANNIN COUNTY—Ed. V. Parsons et al's Morgan 1, J. E. English sur, elev 668 ft, sd 2515 ft.

FRANKLIN COUNTY—Harper & Byers' A. J. Laws 1, D. G. Rogers sur, rig.

FREESTONE COUNTY—Cranfill-Reynolds Co.'s W. E. Bonner-George 1, S. T. Ballour sur, Austin chalk 3016 to 3390 ft, coring hard

Big, rugged, rubber rings that *stabilize* the drill, drill stem and drill pipe....hold pipe in center....stop whipping....overcome vibration above the drill and prevent excessive wear on bottom collars.

They STOP ABRASION by preventing contact of pipe and formation



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Texas and Gulf Coast Distributors:
BETTIS SALES CO., 616 Public National Bank Building, Houston
Oklahoma Distributors:
BAILEY & BECKER COMPANY, 410 Thompson Building, Tulsa
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DRILL STABILIZERS

gray sand 3765 ft. Haley & Young's Pierce-Worthy 1, J. L. Chavert sur, sp and sd. O. W. Killam et al's R. H. Edwards 1, A. Sanchez sur, elev 402 ft, dr 1610 ft. C. F. Lytle et al's Holt 1, D. Avant sur, elev 469 ft, top Austin chalk 3906 ft, coring 4855 ft.

HENDERSON COUNTY—H. B. Ashburn et al's T. E. Terry 1, Arron York sur, sd 1840 ft. E. L. Chapman et al's Cade 1, Simon Weiss sur, dr 2600 ft. Cranfill & Germany, Inc.'s Clara C. Starr 1, Guadalupe Acosta sur, lcn. Cranfill-Reynolds Co. & Louisiana Oil Ref. Corp.'s J. W. Broom 1, Sam Chears sur, Pecan chalk 2695 to 2890 ft, top Austin chalk 3823 ft, traces black heavy oil in Eagleford shale 4430-45 ft. Shell Pet. Corp.'s S. T. Stephens 1, I. D. Owen sur, elev 510 ft, Pecan chalk 2050 to 2129 ft, top Austin chalk 2916 ft, coring red and blue shale 3310 ft.

HOPKINS COUNTY—Lew Wentz & Atlantic Oil Prod. Co.'s S. M. Milholland 1, J. H. Simpson sur, sd 2550 ft.

KAUFMAN COUNTY—Roy Sowell et al's Ables 1, sp and sd.

LAMAR COUNTY—B. L. Laubenheim et al's Johnson 1, Wm. Driggers sur, elev 667 ft, fsh 3090 ft.

LIMESTONE COUNTY—Flannigan et al's Pesnell 1, top chalk 2375 ft, sd 3292 ft. Haley & Heemann's D. Wilkes 1, J. Breeding sur, elev 421 ft, dr 1070 ft.

MORRIS COUNTY—Geo. McCamey et al's P. M. Staggers 1, G. Forbes sur, sp and sd account bad titles.

RAINS COUNTY—D. H. Byrd & Owen-Sloan Oil Co.'s J. D. Hill 1, F. McMahan sur, dr 1810 ft.

RED RIVER COUNTY—E. L. Chapman et al's Morris-Guest 1, S. Lakin sur, sp and sd.

RUSK COUNTY—E. M. Joiner et al's Bradford 3, Pecan chalk 2590 to 2774 ft, sd 2808 ft. Magnolia Pet. Co.'s Duran-Wylie 1, Aquilla Norris sur, elev 431 ft, dr lime and shell 3060 ft.

SMITH COUNTY—Dan Daniels-Adair & T. B. Slick's A. J. Poirier 1, David Wilson sur, sp and sd. E .L. Chapman et al's J. M. Hammon 1, Jas. Reid sur, top Pecan chalk 2680 or 2691 ft, sd 3005 ft. J. D. Kugle et al's M. Freeman 1, A. L. Lagrone sur, sp and sd. Owen-Sloan Oil Co. & R. H. Davis' J. H. Starnes 1, J. W. Allen sur, sd 1322 ft. O. M. Rector et al's M. Dozier 1, M. Maise sur, lcn. Ltd.'s ,-O1 ETAOIN SHRDLPUPU TAO

TITUS COUNTY — Wainwright-West Oils, Ltd.'s Walcott-Lott 1, D. M. Smith sur, elev 280 ft, top Pecan chalk 2600 or 2365 ft, dr shale 3310 ft.

VAN ZANDT COUNTY—Doc Cooper et al's Elliott 1, W. H. Bundy sur, rig. Cranfill-Reynolds Co.'s C. M. Alexander 1, J. Burleson sur, dr 2470 ft. Warren T. Daniels et al's F. Cumby 1, John Wright sur, dr 860 ft. Dennis Oil Corp.'s C. W. Morris 1, C. L. Morrison sur, cem cas 2535 ft to test sand 2543-67 ft. Manley-Sprinkle & Evans' B. C. Andrews 1, M. Neal sur, elev 536 ft, dr 2650 ft. Hartt Pet. Co.'s L. H. Cox 1, A. C. Nugent sur, dk; B. F. Womble 1, P. Young sur, dk. Grand Saline Oil Co.'s W. J. Carnes 1, S. P. Ry. sur, rig. Pandem Oil Corp.'s R. L. Brinn-Gibbard 1, Ray Sunigas sur, sd 3005 ft. L. G. Priest et al's Blanche Blewett 1, E. Porter sur, rig. Texas Chief Oil & Roy. Co.'s J. P. Foster 1, F. Montgomery sur, sp and sd. Van Zandt Oil & Dev. Co.'s Sharp-Robinson 1, J. B. Ybarbo sur, top Pecan chalk 2764 ft, cem cas 2809 ft, td 3150 ft. Upchurch & Will Thompson's Owlet School lot 1, McKinney-Williams sur, dr 2320 ft.

VAN ZANDT COUNTY (Van Field)—Central Oil Co.'s Peters 1, dk. E. L. Chapman et al's J. B. Clark 1, dk. Cranfill-Reynolds Co.'s Coker-Ledbetter 1, Pecan chalk 1840 to 2010 ft, pb from hfw at 3370 ft to test shallow horizon; A. D. Clark (Strip Lse.), dr 500 ft. Humble O&R Co.'s W. Freeman 1, pb from hfw 3023 to 2991 ft. Imperator Oil Co.'s Carter 1, dk. Pure Oil Co.'s Clark-Houston 1, coring 2710 ft; R. C. Crim 1, pb from 3082 to 3037 pump; Jarman 3, dr 1600 ft; Jarman 4, dr 1890 ft and making little oil with water, setting ft; Leonard 1, sp and sd; Murphree 1, sp and sd.; Thompson 3, dr 2400 ft; A. B. Tunnell 1-A, dr 1200 ft; Tunnell 2-A, coring 2600 ft; Van School Lot 1, coring 2700 ft; R. L. Wells 2, coring 2700 ft. Robertson Drilling Co.'s H. J. Ray 1, Blk 14, Nacogdoches sur, lcn. Shell Pet. Corp.'s T. L. Fowler 2, coring 2500 ft.

WOOD COUNTY—Big Indian Oil & Dev. Co. & Tidal Oil Co.'s R. J. King 1, W. M. Barnhill sur, elev 480 or 525 ft, dr shale 2215 ft. Gulf Prod. Co.'s N. E. Carver 1, Wm. Kern sur, elev 400 ft, top Pecan chalk 2870 ft. top Austin 5037 ft, fsh drill pipe 5430 ft. Geo. L. Pace et al's B. G. Dickey 1, J. C. Clark sur, top Midway 1260 ft, dr hard shale 2060 ft. Westexas Oil & Royalty Corp. & Owen-Sloan Oil Co.'s Negro Orphanage 1, Chasi E. Rivers sur, elev 361 ft, top Pecan chalk 3043 ft, dr shale 3895 ft.

SOUTHWEST TEXAS

ATASCOSA COUNTY — Frontier Oil Co.'s Gray 1, 3½ miles south Somerset field, dr about 1220 ft.

BASTROP COUNTY—Botts et al's Alexander 1, dr 1440 ft. Superior Oil Co.'s Moore 1, (Glasscock survey) dr 2215 ft.

BEXAR COUNTY—Burton Oil Co.'s Shook 2, dr 1320 ft. Dingman Drlg. Co.'s Kelso 2, (650 ft north of No. 1, four miles from city limits on Pleasanton road), abn at 1550 ft; Coffey 1, (1¾ miles sw of No. 2 Kelso near Applewhite road), abn 400 ft, to make location for another test near No. 2 Kelso. Moore and Jaur's Ellison 1, dr around 2000 ft. Penn Tex Oil Co.'s Dobrowlski 1, no report; Dobrowlski 2, no report. Salado Oil Co.'s Coreth 1, abn 1668 ft. Henry Yelvington (formerly Swift and Fisher) Beck 1, (10 miles east of San Antonio), to resume dr about 1000 ft.

BEE COUNTY — Humble's McKinney 2 (600 ft se No. 1), set casing at 2970 ft, sand cored at 2793-76 ft. Union Producing Co.'s Ray 7, (600 ft sw of McKinney 1), bailing at 3953 ft, good showing of oil and gas; Ray 8, (600 ft sw McKinney 2), set casing at 3864 ft, oil sand at 3869 ft. Houston Oil Co.'s Portis 1, (200 ft nwl, 200 ft nwl, 200 ft nel) dr 4656 ft. Fd Price's Weiss 1, (2640 ft out of north corner of tract), dr 865 ft in shale. Rowan and Tong's Freeland 1, (150 ft sel, center of tract) dr 3030 ft. Fisher and Wigging (Grayburg Oil Co.'s Kimball 1, (center of tract), dr 3112 ft. Nichols et al's Hicks 2, (300 ft se of No. 1), dr 2960 ft in sandy shale. Morgan et al's McKinney 1, (north of Pettus, 3126 ft from s line), producing 20,000,000 feet of wet gas at 3881-91 ft, casing set at 3880 ft, developed 1000 pounds working pressure. Cosden Oil Co.'s McKinney 1, (John Pace survey 360 ft sl, 300 ft e line of 200-acre lease in the 350-acre tract of R. A. McKinney), moving on—dr water well.

BROOKS COUNTY — Humble's Singer 1, lcn. Houston Oil Co.'s Holbein-Wormser 1, dr 5297 ft; Holbein-Wormser 2, (Sanez part of Palo Blanco de Maguellas grant) lcn. Midwest Public Utilities' Garcia 1, dr 500 ft.

CALDWELL COUNTY — Al Buchanan's School blk. 1, casing set at 2037 ft, no further report. S. Corgill's Lynch 1, abn at 1904 ft. Morgan et al's Perry 1, (three-fourths mile ne Salt Flat field) dr abt 2630 ft. Trinity Drillers' McMullen 1, dr 2983 ft.

DE WITT COUNTY—Republic Prod. Co.'s T. E. Clark 1, (4 miles south of Yorktown) dr 1800 ft. Louisiana Oil Ref. Co.'s Klanerman 1 (400 ft s of n line, 400 ft w of e line of 101-acre tract in R. Galletty league) prep to spud in.

DUVAL COUNTY—Bain and Miller's Benavides 1, sec 173, dr 556 ft. Callahan, Howard and Smith's Luby 1, sec 24, dr 1021 ft. Driscoll's Fee 11, sec 448, flowing 800 bbls oil at 2890 ft, casing set at 2884 ft. Cole Pet. Co.'s Benavides 68, blk 11, sec 14, fsh at 3666 ft. Humble's Kohler 44, sec 424, dr 1630 ft. Magnolia's Hahl 1, strip, set casing at 2298 ft, prep to drill in. Simms Oil Co.'s Dinn 9, dr abt 900 ft. Southern Oil Co.'s Waelder-Wood 1, sec 215, standing 750 ft as water well. Southern Crude Oil Purchasing Co.'s Dunn 1, sec 480, dr at 2296 ft.

FAYETTE COUNTY—Mouldoon Oil Co.'s Kerr 1, dr about 2900 ft.

FRIO COUNTY — Dr. F. L. Thompson's Trebble 1, dr below 3220 ft.

GONZALES COUNTY—Antibus and Cumminds' Martin 1 (8 miles from Gonzales) sd about 2200 ft to install heavier rig and 112 ft derrick. Acme Oil and Royalty Co.'s Weber 1, dr below 2500 ft. Fitzsimmons and Perrinot et al's Huber 1, set casing at 3150 ft in Buda, good oil showing, believed to be in Crevice. Mordon Oil Co.'s Robinson 2, dr about 1900 ft; Borer 1, rept sd.

GOLIAD COUNTY—Humble Oil and Refining Co.'s Lackey and Weldon 1 (2000 ft sel) dr 3620 ft, elevation 380 ft. Morgan et al's Pereira 1, (150 ft out of nw corner of blk 14, V. Ramos survey) moving on.

GUADALUPE COUNTY—Trinity Drillers' White 1, abn 2218 ft in top of chalk. Fowler et al's Blumberg 1, (1½ miles w McQueeny), dr 600 ft. Abercombie et al's Thomas Dix 2, dr 900 ft. Grayburg Oil Co.'s Wells 2, (1425 ft se No. 1), prep to spud in. Morgan et al's Link 1, (7 miles nw Seguin) dr 600 ft. Mid-Kansas Oil and Gas Co.'s J. J. Waldrop 1, sd about 1075 ft. Magnolia's Mrs. M. E. Roamel 2, (south offset to No. 1) producing 1200 bbls at 2577 ft, casing set about 2250 ft; Mrs. M. E. Roamel 3, (west offset to No. 1) prep to drill out plug, casing set at 2862 ft; Richburg 2, prod 400 bbls oil at 2535 ft serpentine; Mrs. Fannie Nixon 1, (3 miles south of Manford pool, 2 miles east of Darst Creek) coring at 2900 ft, topped chalk at 2470 ft. F. W. Patton, trustees, Fred Warren 1, dr about 1350 ft. Sun Oil Co.'s J. Q. Manford 2, (direct east offset to No. 1) dr abt 2200 ft. Suttle et al's Benzaiger 1, (5 miles s of Seguin) dr 1600 ft. Dr. F. L. Thompson's Posey 1, no report. Tidal Oil Co.'s Seligman 1, (H. J. Williamson survey) dr about 300 ft. Louisiana Oil Ref. Co.'s (formerly United North and South Oil Company) Thomas Dix 3, (east offset to Magnolia-Roamel gusher) prod 3300 bbls oil at 2577 ft, casing set around 1923 ft; Thomas Dix 4, (sw offset to gusher) prod 2200 bbls at 2584 ft, casing set at 2527 ft; Thomas Dix 5, spud in.

KARNES COUNTY—Hewitt et al's Matula 1, sd; (Hurador Pet. Co.) Porter 1, no report.

KERR COUNTY—Mach et al's Love 1, spud in.

KENDALL COUNTY—Borget et al's Willie Haag 1, fsh abt 750 ft. Dixon et al's Behr 1, (3 miles se Sisterdale) sd 1000 ft, waiting on casing, report cavings in hole. Dixon and Morrison's Edmondson 1, dr 120 ft. Seaboard Oil Co.'s Askey 1, (3 miles n Sisterdale) sd at 930 ft for orders, good showing of oil. Sinton Oil Co.'s Garvin 1, dr 400 ft.

KINNEY COUNTY—Lloyd Oil Co.'s Moore 1, abn 3027 ft. Blume et al's Herbst 2, dr abt 800 ft. Magnolia's Wardlow 1, (Blaez survey) prep to spud.

LIVE OAK COUNTY—Houston Oil Co.'s Booth 1, to spud in. Dougherty et al's Fee 1, (2254 ft nwl, 750 ft swl, M. Borden survey) moving on.

MAVERICK COUNTY — Rycade's Chittim 5, reaming below 3500 ft; Sullivan 5, sec 82, dr about 3800 ft.

MEDINA COUNTY—Donaldson Oil Co.'s Adams 2, dr below 100 ft. Pearson Oil Co.'s Irrigation 5, dr 942 ft. Pat Armstrong's Crawford 1, dr abt 400 ft; Butts 1, dr 1390 ft. Pan American Pet. Co.'s Hart 1, dr 820 ft. Pure Oil Co.'s Fohn 1, dr below 1800 ft.

REFUGIO COUNTY — Blanco Creek Oil Co.'s Demon 1, (Bonnie View Ranch) sec 16, dr 2110 ft. Dixon et al's Jurika 1, sec 37 (Bonnie View Ranch) trying to complete test, has good oil and gas showing in sandy shale at 3359-79 ft. Hamil Drilling Co.'s Cable 1, dr. Heflin's Fannie Heard 2, dr 1932 ft. Edwin M. Jones' Heard 1-A, prod 500 bbls at 3644-66 ft; Jetter 1-A, casing set at 3695 ft, tested salt water at 3707-10 ft, no further report. Houston Oil Co.'s Rooke 14, prod 250 bbls oil at 3699 ft, casing set at 3685 ft; Doughty 1, casing set at 5432 ft, prod 75 bbls of 70 gravity oil (gasoline) at 5462-72 ft, 2000 pounds working pressure; Tom Heard 1, blk 16, prod 100 bbls 70 gravity oil (gasoline) through tubing at 5470 ft(casing set at 5460 ft; Kay 1, dr 1988 ft; Vance 1, dr 2110 ft; Fannie Heard 9, casing set at 3700 ft, test 3705-20 ft; Ryalls 2, reaming at 3800 ft; Rose Lambert 1, dr 620 ft. Independent Oil & Gas Co.'s Mercy Academy 1, dr 5305 ft; Helen Reilly 1, cored sand at 5085 ft, showed salt water and oil on drill stem test; M. F. Lambert 1, dr 3894 ft; Claude Heard 4, prod 1000 bbls oil at 3688 ft; Claude Heard 5, prod 1000 bbls oil at 3693 ft; J. B. F. Heard C-1, dr 5588 ft; O'Brien 1, showing at 6600-07 ft, some oil and salt water on drill stem test. Larco Oil Co.'s Strauch 4, dr 3415 ft. Mission Drlg. Co.'s Moss 1, blk 110, dr 6200 ft. Moody-Seagraves Producing Co.'s (Morgan Oil Corporation) Powers 1, abn

CONSTRUCTORS OF PIPE LINES OF ANY SIZE, TYPE OR LENGTH

THE facilities of this organization are ever increasing for efficient service in pipe line construction in all its phases.

Williams Brothers, Inc.

PIPE LINE CONTRACTORS

Exchange Bank Building

Tulsa, Oklahoma

6538 ft; City 6, being completed 3680-98 ft, casing set at 3680 ft; City 7, dr 3675 ft. Rutherford Traylor Oil Co.'s Cable 1, dr 3615 ft. Saxet Oil Co.'s Ryalls 2, dr 4834 ft; Cable 2, dr 952 ft. Stroube and Stroube's Cable 1, prod. 500 bbls at 3684-87 ft. Sun Oil Co.'s Buckley 3, working over, casing set at 3668 ft, bottom of hole 3690 ft; Buckley 4, dr 900 ft; Johnson 2, dr 3660 ft. Union Producing Co.'s O'Brien 3, dr 5312 ft; Powers 3, dr 3515 ft; Morgan-Vance 3, swabbing, casing set abt 3670 ft; Morgan Shelly 3, being at 3680-90 ft; Lambert 2, showing of oil below 5800 ft; Lambert Lambert 3, dr 2414 ft; O'Brien 4, dr 4879 ft; Mitchell 4, dk; Powers 4, spud in; Morgan-Shelly 4, prep to spud; Fannie Heard 9, dr 896 ft. Morgan et al's St. John 1, dr 1450 ft.

SAN PATRICIO COUNTY—George Pickett's J. C. Baldwin 1, (5½ miles e Sinton) dr below 1120 ft. LaFeria Oil and Gas Co.'s G. C. Smith 1, dr 2716 ft.

STARR COUNTY — Mrs. J. L. Smith's Welch 1, no report. Texas Co.'s Guerra 1-B, testing at 3500 ft.

UVALDE COUNTY — Phantom Oil Co.'s Claudt 1, dr abt 1412 ft.

VAL VERDE COUNTY—A. Blume's J. P. Yoas 1, blk 3, sec. 31, ru. Phantom Oil Co.'s Ingram 1, no report, casing set at 2540 ft.

WEBB COUNTY—Buckner's Benavides 1-A, (se Cole field) to dr deeper, standing at 1613 ft. Houston Oil Co.'s Benavides 2-D, dr. French Oil Co.'s Rosa Benavides 1, dr 200 ft. O. W. Killam's Bruni 18, sec 9, dr 3588 ft; Bruni 1-V, blk 22, Albercas Grant, reaming 2287 ft. Morria Drlg. Co.'s Benavides 2, to deepen from 1984 ft. South Texas Prod. Co.'s Fansler 1, lcn.

ZAPATA COUNTY — Blankenship et al's Garcia 2, tested gas and salt water at 1607-28 ft, dr at 1630 ft; Montemayor 2, dr 700 ft. W. R. Duke's Martinez 2, dr below 1000 ft. Dr. A. L. Edginton's Trevino 3, set casing at 1215 ft. O. W. Killam's Cuellar 17, dr 1335 ft; Cuellar 21, dr 2145 ft; Cuellar 15-C, sec 278, prod 300 bbls oil at 1563 ft, casing set at 1537 ft. Livingston and Twiss' Trevino 1, sec 66, blk 7, dr 1230 ft. Magnolia Pet. Co.'s Cuellar 3, sec 245, dr below 2750 ft. Muckelroy's Trevino 3, dr abt 1300 ft. Moore and Moore's Flores 1, lcn. National Oil Co.'s Adams 1, temp sd. B. F. Nixon's Guiterrez 1, blk 8, lot 5, setting up tools.

ZAVALLA COUNTY—Southern Crude Oil Co.'s Washer 1, dr 3511 ft. Wiegand Bros.' Gates 1, dr 3242 ft.

TEXAS GULF COAST

Completions

HARRIS COUNTY—		
Rich et al, Highland Farms 1, Elena	*	100
JEFFERSON COUNTY—		
Bayou Oil Co., Hooks-Bordages 1, 2 mi s Voth	*	5510
WALKER COUNTY—		
Geo. Hindman et al, Delta Ld. & Lbr. Co. 1, 3½ mi w New Weaverly	*	1200

AUSTIN COUNTY—Jas. T. O'Hara's Batla 1, 2 mi nw Raccoon City, Wm. Smithers sur, sd 4000 ft. Black Oil Co.'s Lancashire 1, 3 mi s Sealey, washing to bottom, 3050 ft td. McInnerrey & Harris' Hattie McDade 1, Jno. Martin sur, w Kinney, sd 500 ft. Empire's J. T. Boyd 1, San Felipe, dr 3610 ft sand rock. Thos. Faust et al's Fee 6, 2 mi s Nash Dome, set cas at 4083 ft.

BRAZORIA COUNTY — Steele & Strickland's Lochridge 1, dk. Shell's Blakely-Winston 1, 2 mi ne Danbury, dr 5125 ft shale. Rycade-Amerada's Rapid City 1, 2 mi s Danbury, dr 3310 ft gbo. The Texas Co.'s Ewing 1, 1½ mi n Manvel, dr 3973 ft sandy shale and lime. Mills Bennett's Randon 1, Allen dome, dr 4000 ft sand and lime.

CHAMBERS COUNTY — Pure's W. F. Mayes 10, Lost Lake, will pump, tested oil and salt water at 2848 ft; Mayes 11, dr 1285 ft hard lime; Lost Lake 4, abn at 4480 ft in cap rock. Pure's Kirby 1, Cove area, Chas. Tilton sur, dr 1075 ft lime and shale. Pure-Rycade's Jackson 1, 6 mi w High Island, lcn. Shell's Herff 1, Moss Bluff, dr 3001 ft sandy lime. Superior Oil Co.'s H. Jackson 1, 4 mi w High Island, dr 2551 ft shale and sand. Chicago Oil Corp.'s Lawrence 1, 10 mi s Barbers Hill, core sand at 3292 ft.

FORT BEND COUNTY — Gulf's Brazos Valley Irrig. Co. 2, 3 mi sw Clodine, dr 1610 ft shale. Gulf's Moore 21, Moores Field, sd 3220 ft; Moore 22, dr 2660 ft gbo and lime. Pure's Jackson Brown 1, Wm. Barrett & Abner Harris sur, near Pilant Lake, dr 3800 ft shale.

GRIMES COUNTY—Cranfill-Reynolds Co.'s Baylor 1, 9 mi se Navasota, dr 4225 ft shale.

HARRIS COUNTY—Humble's Simms-Smith 77, Goose Creek, dr 6425 ft shale. Humble's Warren 7, Hockley, dr 5320 ft sandy shale; Minnetex 2, Mykawa, sd 1216 ft; Siadous 1, Mykawa, dr 4946 ft sandy shale. Mrs. J. C. Baldwin's Kitzman 1, 2 mi n Cypress, sd 4247 ft. Martin, Drake & Jones' Haney 1, 3 mi e Elena, dr 4690 ft hard shale. Rich et al's Highland Farms 1, Elena, abn 100 ft. Sloan Prospecting Co.'s Ulrich 1, 5 mi nw Barbers Hill, dr 5920 ft hard crystallized lime. Cranfill-Reynolds Co.'s Rorick 1, 6 mi s Cypress, dr 50 ft clay. Strang Pet. Corp.'s Good 1, E. Brinson sur, near Deer Park, dr 500 ft gbo.

JACKSON COUNTY — The Texas Co.'s Mitchell 1, 12 mi s Edna, ru.

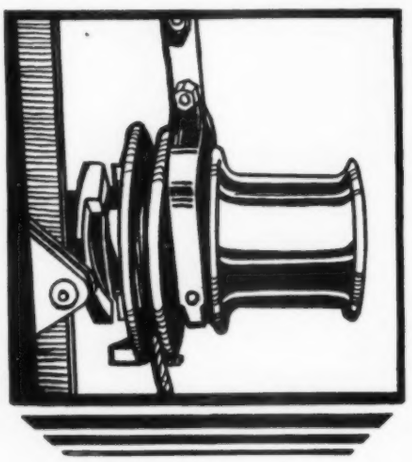
JEFFERSON COUNTY — Westbury Oil Co.'s West 1, sd 3090 ft. Gulf's Burrell 5, Fannett, dr 5165 ft shale. The Texas Co.-Houston Oil Co.'s Fitzhugh 1, Big Hill, fsh 5863 ft. Bayou Oil Co.'s Hooks-Bordages 1, 2 mi s Voth, abn 5500 ft shale.

LIBERTY COUNTY—Gulf's W. H. P. McFadden 1, Moss Bluff, dr 2675 ft gbo. Humble's Sabine Tram 1, Devers, M. Whittington sur, dr below 100 ft. The Texas Co.'s-Paraffine Oil Co.'s Fee 1, N. Dayton, dr 4687 ft. Houtex Prod. Co.'s Brown-Tadlock 1, N. Dayton, dr 4815 ft sand and shale. V. H. Borsodi et al's Gulf Fee 1, N. Dayton, dr 4350 ft sand and shale, oil show; Gulf, Fee 2, dr 1503 ft gbo. Gulf's Boyt 4, Hankamer, blew out from 2825 ft, sanded up, repairing dk and rig; Boyt 5, dr 2790 ft sandy shale, oil show; Lee 1, lcn.

MATAGORDA COUNTY—Cockburn et al's Hawkins 1, Shepherds Mott, dr 5265 ft sand

MONTGOMERY COUNTY — Kelly-Baker's Juergus 2, 3 mi Conroe, sd 1900 ft.

No Cathead Repairs



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SPANG & COMPANY
Butler, Pa.

SPANG

WELDLESS JARS

VICTORIA COUNTY—Humble's Welder 1, 3 mi se Nursery, dr 6200 ft shale.

WALKER COUNTY — Indian Pet. Co.'s Smither Bros. 1, ne Huntsville, set screen at 3725 ft and tested salt water with slight oil show. Joyce Richardson et al's Smither 1, 12 mi n Huntsville, dr 3100 ft shale. Geo. Hindman's Delta Ld. & Lbr. Co. 1, 3 mi w New Weaverly, abn at 1200 ft.

WALLER COUNTY—W. P. Morris' et al's Chapman 1, 6 mi n Hempstead, sd 2075 ft. Kirby Pet. Co.'s Davis 2, San Felipe, blew out at 3000 ft, flowed estimated 25,000 bbls warm fresh water, well bridged over. Humble's R. Hardy B-1, Raccoon Bend, dr 3283 ft shale.

WASHINGTON COUNTY—W. D. Anderson's Muellar 1, ne Burton, dr 2050 ft shale. W. B. Birdwell's Schram 1, 3 mi e Brenham, sd 2105 ft. Mid-Kansas O. & G. Co.'s Sommers 1, 3 mi n Chappel Hill, dr 2960 ft shale; Johnke 1, nw part of county, lcn.

SOUTH LOUISIANA

ACADIA PARISH—Yount-Lee's Houssiere-Latrielle 8, Evangeline, dr 7040 ft shale and lime; C. O. & M. Co. 6, dr 5142 ft hard sand. The Texas Co.'s Rayne Hrs. 5, Evangeline, dr 8014 ft sandy shale. Calcasieu Oil Co., Union Sulphur Co. & Magnolia's Hayes 1, Sec. 10-8s-1w, dr 6105 ft hard sand.

ASCENSION PARISH—Gulf's United Lds. Co. 18, Sorrento, preparing to test at 1615 ft.

AVOYELLES PARISH — R. A. Tippett's Chatalin 1, 5-1n-3e, dr 1875 ft water sand.

CALCASIEU PARISH—Adams Oil Co.'s Roderick 1, Starks, dr 250 ft. Gulf's Lutcher Moore 21, Starks, dr 575 ft. Shell's Heyd 1, Iowa, 13-ns-7w, dk.

CAMERON PARISH—The Texas Co.'s Calcasieu Lake A-5, S. Calcasieu Lake dome, dr 3936 ft anhydrite. Pure's Yount-Lee 9, Sweet Lake, set cas at 4650 ft. Calcasieu Oil Co.'s Caldwell 5, E. Hackberry, dr 6280 ft shale. Rycade-Humble's Gulf Land 1, Hackberry, tested salt water at 4385 ft. Yount-Lee Oil Co.'s School Section 10, Hackberry, dr 3065 ft water sand.

IBERIA PARISH—The Texas Co.'s State Vermilion Bay 5, bldg foundation. Jefferson Lake Oil Co.'s Lake Peigneur 5, Jefferson Island, dr 800 ft rock; No. 6, sd 100 ft.

IBERVILLE PARISH—Shell's Wilbert 4, White Castle, tested salt water at 4885 ft on dr stem test. Standard of La.'s Schwing 4, Bayou Blue, dr sand at 2088 ft, oil show; Wilbert 6, Bayou Blue, dr into salt to 3025 ft, will plug back to test around 2000 ft; Cyrus Case 1, Bayou des Glaise, dr sandy lime at 3160 ft.

JEFFERSON DAVIS PARISH — Yount-Lee's George Courtney 1, Welsh, dr 1400 ft gbo; Abbott 1, dr 1665 ft sand and shale. Pure's A. F. & W. L. Day 1, 1½ mi sw Welsh, dr 4750 ft gbo.

LA FOURCHE PARISH—Gulf's City of New Orleans 1, Wisner dome, abn at 6388 ft. The Texas Co.'s LL & E-Leesville 1, ru. Humble's Cockrell-Moran 1, Bayou Long, tested salt water at 1755 ft, will abn; Lake Washington 1, dr 4920 ft shale. The Texas Co.'s Garden Island Bay State 4, moving in.

ST. LANDRY PARISH—Elbof Exploration's Valmont Ledoux 1, Eunice, sd 4360 ft. The Texas Co.'s Botany Bay Fee 7, Port Barre, dr 1200 ft. Gulf's Godet 3, Port Barre, abn at 3965 ft salt; W. H. Hoskins 2-A, Port Barre, tested salt water at 3564 ft, will deepen. Hebert-Baker Oil Co.'s E. D. Fisher 1, dr 4156 ft hard shale.

ST. MARTIN PARISH—The Texas Co.'s Iberville Ld. Co. 1, Hager Dome, abn at 6765 ft. Rycade-Humble's Bayou Bouillon 9-B, washing to bottom.

ST. MARY PARISH — Pure's Wax Lake State 2, dr 350 ft.

TERREBONNE PARISH — Chas. Paggi's Evergreen 2, dr 1785 ft sandy shale. The Texas Co.'s LLE-Bay Junop 1, bldg foundation; Caillou Island State 3, 18-23s-20e, lcn; Four Isle 3, 23-21s-16e, dr 3558 ft cap rock; Lake Pelto B-2, 8-23s-18e, dr 1550 ft water sand; Bay St. Elaine State 4, 17-22s-18e, dr 4145 ft hard sand; Dog Lake State 2-A, 5-22s-16e, dr 500 ft water sand.

WEST FELICIANA PARISH — Putnam Synd.'s Como Plantation 1, Sec. 54-1s-4w, dr 3475 ft sandy shale.

A Short Bit and a Long Bit
Both in One

The T-I-W-CHRISTIAN gives you all the advantages of a short bit, without the disadvantages of either. Water courses leading direct to the cutting edge give the pressure at the bottom and the speed of a short bit, while retaining the straight hole advantages of a long bit.

Builds Up Sidewall

The oval shape of the bit is the result of successful experiments to construct a bit that would contribute to the building up of the side wall. This shape tends to plaster or shove the mud out into the wall, helping to build it up.

Great Strength from Tubular Construction

The application of the principle of greater strength from tubular construction will be noted in the T-I-W-CHRISTIAN BIT. There is only one hole through the shank and body of the bit and that right through the center, thus obviating the reduction of strength that takes place when holes are drilled through the outer radius at points of greater torsion.

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NORTH LOUISIANA

BOSSIER PARISH—
Natural Gas Prod. Co., U. S. 2, 31-23-11 ..... 25 3177
Phillips, Bolin 3, 30-23-11 ..... * 3462
Bolin 4, 30-23-11 ..... * 3180
The Texas Co., Peyton 4, 30-23-11 * 3200
Morgan et al, Weatherbee 3, 21-19-11 * 2405

CATAHOULA PARISH—
Lochnager O&G Co., Taliaferro 1, 26-9-6e ..... * 900

OUACHITA PARISH—
J. L. Bullock, Tr., West Virginia 1, 25-18-5e ..... * 2700

SABINE PARISH—
W. F. Lacey et al, Knouse 1, 36-8-13 ..... * 2563
David & Tyson, Neville & Roberts 1, 31-8-12 ..... 75 2187
Bob Elmore, Bolin 1, 31-8-12 ..... * 2602
Benedum & Trees, Sabine Lbr. Co. 1, 34-8-12 .....1497 2360

WEBSTER PARISH—
Pat Hudson, B. L. Slack 1, 36-23-11 20 2741

BIENVILLE PARISH — W. A. Nichols' McDermott 1, 28-18-6w, sd 1400 ft.

BOSSIER PARISH—Ark. Fuel Oil Co.'s Bolinger 3, 38-23-11, arr ds test 3263 ft; Bolinger 4, 38-23-11, making ds test 3270 ft; Barnett 1, 25-23-12, set 6⅝ cas 3135 ft, 750 ft oil in hole 12 ft sand, wosr, td 3159 ft; Barnett B-1, 36-23-12, set 6⅝ cas 3140 ft; Barnett B-2, 26-23-12, dk; Marks Meyer 1, 36-23-12, rig up to deepen, td 3088 ft; Floyd 1, 25-23-12, set 6⅝ cas 3135 ft, wosr, td 3176 ft; Peyton 3, 30-23-11, set 6⅝ cas 3130 ft, TA 3285 ft; Peyton 4, 30-23-11, set 6⅝ cas 3131 ft, td 3161 ft; Kilgore A-3, 30-23-11, dr hard sandy lime 2423 ft; Kilgore A-4, 30-23-11, dr bro sand 3092 ft; Kilgore B-4, 31-23-11, re-set 6⅝ cas 3175 ft; Kilgore B-5, 31-23-11, dr hard sand 3050 ft; Kilgore B-6, 31-23-11, dk pat; Kilgore B-7, 31-23-11, dk pat; Kilgore B-8, 31-23-11, dk; Kilgore B-9, 31-23-11, lcn; Ramsey 1, 31-23-11, rig up. Air Lift Oil Co.'s & Bahan & Bahan's Pleasant 1, 23-23-12, sd wo 3215 ft. Askew & Goodman's Roberson 1, 25-23-12, 16 ft bro sand 3143-59 ft, tested sw show oil and gas 3167 ft. Deleware La. Dev. Co.'s Bolinger 3, 38-23-11, old well arr deepen; Bolinger 6, 38-23-11, set 6⅝ cas 3182 ft hfo 15 ft bro sand, wosr td 3217 ft. Lide et al's Matlock 1, 26-23-12, rig up. Natural Gas Prod. Co.'s U. S. 2, 31-23-11, pumping 25 bbls oil 10 ft sand, td 3177 ft; U. S. 3, 31-23-11, lcn; U. S. 4, 31-23-11, lcn. Greenwood Prod. Co.'s Bolinger 1, 36-23-12, set 5-inch cas 3139 ft, 2 ft sand tested 300 ft oil 3190 ft, arr deepen. H. L. Hunt's Allen 1, 30-23-11, wo 3482 ft; Peyton 5, 25-23-12, lcn; Peyton 7, 25-23-12, lcn; Peyton 8, 25-23-12, rig up; Peyton 9, 25-23-12, set 6⅝ cas 3178 ft, topped sand 3178 ft wosr 100 ft oil in hole, td 3222 ft; Peyton 10, 25-23-12, topped sand 3156 ft, set 6⅝ cas 3156 ft, 500 ft fluid 50 per cent sw in hole, td 3176 ft. Woodley et al's L. & A. 2, 14-23-12, 4 ft sand set 4½-inch cas 3133 ft, tested dry ur, td 3156 ft; Roberson 1, 22-23-12, dr 1500 ft. Andrews & Devlin's Nattin 1, 15-22-14, rig up. Walker et al's Antrim 1, 28-21-13, sd 3184 ft. La. G&F Co.'s Crystal O&G Co. 1, 7-21-11, rig up. C. H. French's Biedenharn 1, 23-21-14, rig up. H. I. Morgan et al's Weatherbee 3, 21-19-11, dry abn td 2405 ft; Weatherbee 4, 21-19-11, sp set 10-inch cas 112 ft. Goodman-Johnson's Martin 1, 30-23-11, wosr td 3169 ft. Magnolia Pet. Co.'s Matlock 2, 25-23-12, tested dry 3032 ft, tested est 1 mil gas 3084 ft, tested 4 joints oil and mud 3104 ft, coring 3173 ft; Matlock 3, 25-23-12, sp set 13 ⅜ cas 193 ft, dr 322 ft; Roberson 1, 26-23-12, set 5¾ cas 3137 ft, tested small oil show 3241 ft, cor gray shale 3269 ft. La. Pet. Co.'s H. H. Bain 3, 31-23-11, arr set 6-inch cas 3130 ft, td 3271 ft. Texas Co.'s Peyton 2, 25-23-12, set 6-inch cas 3135 ft, wosr td 3140 ft; Peyton 4, 30-23-11, dry abn, td 3200 ft; Peyton 5, 25-23-12, dk; Peyton 7, 30-23-11, set 6-inch cas 3128 ft, 11 ft sand td 3153 ft; Wilkinson 6, 36-23-12, dr 2946 ft; Henry Rose 1, 31-23-11, old well rig up to deepen; Peyton 1, 31-23-11, old well rig up to deepen, td 3070 ft; Wilkinson 7, 36-23-12, lcn; Wilkinson 8, 36-23-12, lcn. Olsan Bros. et al's Pine Woods Lbr. Co. 1, 25-23-12, lcn. Phillips Pet. Co.'s Floyd 1, 25-23-12, rig up; Bolin 3, 30-23-11, no sand, dry abn, td 3462 ft; Bolin 4, 30-23-11, no sand dry abn, td 3180 ft; Bolinger 1, 38-23-11, dk; Bolin 1, 38-23-11, cor shale 3180 ft. Tippett et al's Holmes 2, 36-23-12, fsh for bit 2446 ft. E. W. Bateman's Bolinger 1, 38-23-

11, sd wo 1000 ft; Bolinger 2, 38-23-11, lcn. Eylers O&G Co.'s Wise 1, 35-23-12, set 6-inch cas 3127 ft, 175 ft oil in hole blg to test, td 3129 ft.

CADDO PARISH — Triangle Drilling Co.'s Hardy 1, 18-19-16, set 8-inch cas 1726 ft, dr 2090 ft. C. W. Robinson's Wilson 1, 2-15-16, coring shale 2935 ft. I. N. Pharris' Oden 1, 191914, set 6⅝ cas 2379 ft, td 2409 ft. R. W. Norton's 33-23-16, dr 4570 ft. Magnolia Pet. Co.'s Swann & Davis 1, 16-21-14, set 6⅝ cas 1535 ft, td 1580 ft. L. B. Mawk's Swann Bros. 1, 23-21-14, sd for fuel 700 ft.

CATAHOULA PARISH — National O&G Co.'s Kirkland 1, 35-9-6e, rig up. Lochnager O&G Co.'s Taliaferro 1, 26-9-6e, rig moved dry abn, td 900 ft. (sec. completion).

CLAIBORNE PARISH — El Dorado Chief Oil Co.'s Simmons 1, 27-20-7w, sd wo in bldrs and shale 2240 ft. Leue Oil Co.'s Taylor 1, 16-22-6w, sd wo 2864 ft.

CONCORDIA PARISH—Joe Marr et al's Maxwell 1, 33-3-8e, dr 2072 ft. A .C. Glassell's Pittsfield Plantation 1, 41-8-10e, lcn.

DE SOTO PARISH—Benson O. & G. Co.'s Harris 1, 6-10-13, set 6⅝ cas 3070 ft, sd wo 3650 ft. R. O. Roy's Farmer B-1, 8-13-13, dk; Lee 1, 33-14-13, topped Nacatosh 1235 ft, sd repr rig 1900 ft; R. A. Nelson 1, 36-15-13, rig up; Parker Bros. 1, 31-14-13, rig up; Whittaker A-1, 5-13-13, dk. (Whittaker 1 comp. as sw hole 2950 ft in 1928). H. L. Hunt's Furman 1, 5-14-13, dk. Odell & Lawton's Harris 1, 11-13-14, old well rig up to deepen, td 3140 ft. (dr by Danciger Oil Co.) Ark. Fuel Oil Co.'s Scott 1, 32-14-13, dr shale strks lime 2965 ft. Benedum & Trees' Johnson 1, 7-11-13, set 7-inch cas 2930 ft, td 3054 ft.

FRANKLIN PARISH—Evansville Inv. Co.'s Welsh 1, 2-14-8e, dr black shale 4037 ft. Franklin O&G Co.'s O'Brien 1, 7-15-9e, sd 3200 ft. Davis et al's Moore 1, 12-11-6e, sd 1430 ft.

NATCHITOCHES PARISH — S. D. McDaniels' Clark-Morse 1, 23-5-6w, sd 2356 ft. Robeline O&G Co.'s Winn 1, 7-8-9w, sd in rock 1635 ft. W. M. Coat's Collins 1, 28-9-10, lcn.

JACKSON PARISH—El Dorado Chief Oil Co.'s Southern Adv. Paper Co. 1, 35-15-4w, dk.

OUACHITA PARISH—J. L. Bullock, Tr.'s, West Va. 1, 25-18-5e, sw abn, td 2700 ft.

RAPIDES PARISH—Ayers Bros.' Wicklipp 1, 9-5n-2w, sd 2650 ft.

RED RIVER PARISH — W. D. Ball's Krumbholz 1, 32-14-10, set 6⅝ cas 1680 ft, td 1701 ft.

RICHLAND PARISH — Austin & McDonald's Millsaps 2, 17-17-6e, sd 2697 ft; Millsaps 3, 16-17-6e, sd 2477 ft; Millsaps 4, 16-17-6e, lcn; Millsaps 5, 8-17-6e, dk; Hunt 1, 13-17-5e, dk. W. C. Feazel's Landrum 1, 6-16-7e, dk. International Gas Prod. Co.'s LaGrone 1, 7-16-7e, lcn.

SABINE PARISH—McDaniels et al's Batson 1, 16-8-12, dr 1050 ft. Benedum & Trees' Bowman-Hicks A-2, 3-7-12, set 8¼-inch cas 2390 ft, wosr td 2725 ft; Bowman-Hicks 4, 34-8-12, rig up; Bowman-Hicks 5, 34-8-12, hit base chalk 2825 ft dr 2853 ft; Bowman-Hicks 6, 33-8-12, flowing est 600 bbls oil wo gauge td 2530 ft; Bowman-Hicks 7, 4-7-12, tested 2000 ft oil 2660 ft, dr 2667 ft; Sabine Lbr. Co. 1, 34-8-12, set 8¼-inch cas 2340 ft, flowing 1497 bbls oil, td 2360 ft (revised depth); Bowman-Hicks 8, 18-7-13, dk; Bowman-Hicks 9, 34-8-12, dk pat; Peavy-Wilson 1, 21-6-13, rig up. R. L. Gay, Tr.'s, Bowman-Hicks 7, 14-7-14, set 6-inch cas 2090 ft, flowing by heads, td 2575 ft; Bowman-Hicks 8, 18-7-13, dk; Sabine Lbr. Co. 4, 13-7-14, tested show oil and gas will deepen, td 2400 ft. A. H. Tarver's Sabine State Bank 1, 27-8-12, pumping wo gauge, td 2680 ft. Olsan Bros.' Hooker 1, 27-8-12, topped chalk 2357 ft, set 6⅝ cas 2333 ft, wosr, td 2625 ft; Ferguson 1, 33-8-12, dk. Ohio Oil Co.'s Bowman-Hicks 3, 33-8-12, set 6⅝ cas 2400 ft, wo 2680 ft; Bowman-Hicks 1, Acct. 2, 6-7-13, topped marl 2062 ft, dr 2130 ft. Bridges-Clark Oil Co.'s Cook 1, 3-9-12, set 6⅝ cas 3274 ft, lubricating. W. G. Gray's Nulden 1, 6-7-12, set 6⅝ cas 2197 ft,topped Blossom 2823 ft, dr gumbo 3232 ft. Ruston Drilling Co.'s Bowman-Hicks 1, 4-7-12, TA 2640 ft; Bowman-Hicks 2, 35-8-12, set 6⅝ cas 2330 ft, wo 2690 ft; Bowman-Hicks B-1, 24-7-14, dr 1257 ft. Warner Quinlan Co.'s Sabine 2, 34-8-12, lcn. Stovall Drilling Co.'s Lefkovitz 1, 33-8-12, set 6⅝ cas 2328 ft, wo 2699 ft. Le Grande et al's Giaque 1, 6-7-12, lcn. D. H. Reddick, Tr.'s, Scretchfield 1, 16-9-12, sd wo 2590 ft. H. S. Autrey's Long-Bell Lbr. Co. 1,

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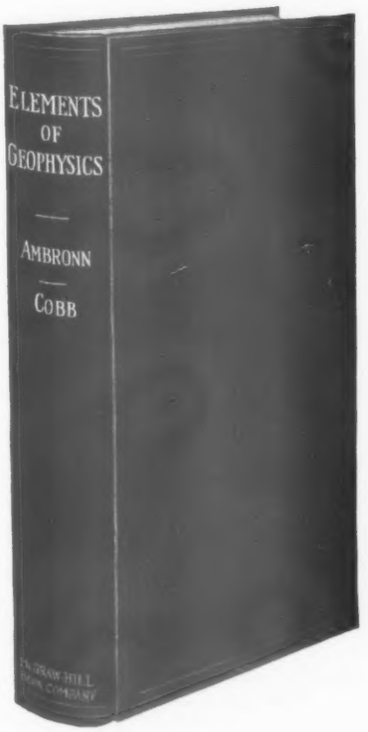

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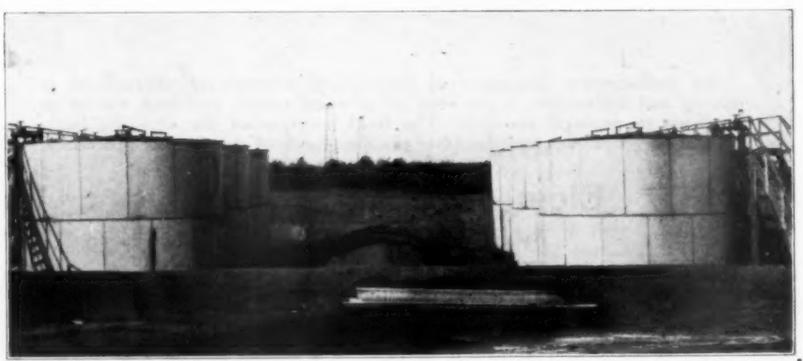

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35-8-14, set 8¼-inch cas 1804 ft, topped marl 1907 ft, dr marl 1948 ft. Paramount O&G Co.'s Woolums 1, 11-6-12, sd 1650 ft. Zeke Lohman's Wyatt Lbr. Co. 1, 18-4-11, dk. Pelican Nat. Gas Co.'s La. Long Leaf Lbr. Co. 1, 50 ft oil in hole, wosr, td 2425 ft; Sabine Lbr. Co. 1, 1-7-12, topped marl 2292 ft, set 6⅝ cas 2310 ft, 50 ft oil in hole at 2465 ft, bailed dry show oil 2575 ft, arr deepen. Ray-Dawes Drlg. Co.'s Mansfield Hdw. Lbr. Co. 1, 36-8-13, set 6⅝ cas 2115 ft, tested dry show oil wo 2550 ft. Henshaw et al's Sabine A-1, 31-8-12, set 6⅝ cas 2177 ft, sd 2525 ft; Sabine A-3, 31-8-12, lcn; Sabine B-1, 31-8-12, set 6⅝ cas 2168 ft TA 2640 ft. C. L. Jett, Tr.'s, Jones 1, 31-8-12, set 6-inch cas 2164 ft, bailing showing oil, td 2170 ft. E. C. Simmons' Bolin 1, 31-8-12, set 6⅝ cas 2140 ft, dry abn td 2602 ft, (later carried as Bob Elmore's Bolin 1). Leach 1, 31-8-12, lcn; Anderson 1, 31-8-12, lcn. Dooley & Howard's Williams 1, 31-8-12, lcn. Root Ref. Co.'s & Air Lift Oil Co.'s Leone 1, 32-8-12, set 6⅝ cas 2230 ft, wo 2600 ft. Joe Burnham et al's Bolin 1, set 6⅝ cas 2175 ft, TA 2436 ft. David & Tyson's Neville & Roberts 1, 31-8-12, set 6-inch cas 2165 ft, flowing by heads 75 bbls day, td 2187 ft. Floyd Oil Co.'s Barnett 1, 31-8-12, set 6⅝ cas 2185 ft, bailing showing oil 2440 ft. Glassell & Merren's Thomas 1, 31-8-12, set 6⅝ cas 2201 ft, wo 2600 ft. Sabine Lbr. Co.'s Fee 1, 31-8-12, set 6-inch cas 2219 ft, td 2237 ft. W. S. Smith et al's Colquitt 1, 31-8-12, dk; Williams 1, 31-8-12, rig up; Henderson 1, 31-8-12, dk. F. M. Hood's Winston 1, 31-8-12, set 6⅝ cas 2214 ft, bailing to test, td 2234 ft. Bahan & Bahan's Meshell 1, 32-8-12, set 6-inch cas 2218 ft, dry wo 2570 ft. J. R. Crawford's Meshell 1, 32-8-12, sd 1950 ft. Philp Bros.' Dow 1, 31-8-12, sd 470 ft. Longoria et al's Belton 1, 31-9-13, rig up. Dudney et al's eParson 1, 31-8-12, dr 1975 ft. Lacey et al's Knouse 1, 36-8-13, dry abn, td 2563 ft. Jones & Johnson's Pearson 1, 31-8-12, set 6-inch cas 2248 ft, td 2269 ft. Allen & Thompson's Wall 1, 31-8-12, sp set 10-inch cas 102 ft, dr 375 ft. Gerke et al's Okerson 1, 31-8-12, dk. L. D. Allison's Holliday 1, 31-8-12, dk. McFann & Pace's Reeves 1, 31-8-12, dk. W. D. Perritt's Crow 1, 31-8-12, dk. Pelican Nat. Gas Co.'s La. Long Leaf Lbr. Co. 2, 20-7-12, dk.

TENSAS PARISH—Willis et al's Curry 1, 39-11-12e, dr 1295 ft.

UNION PARISH—Fred Stovall's Stovall 1, 32-23-4e, moved rig, high water.

WEBSTER PARISH — J. J. Kean's Monzingo 1, 27-18-8w, set 8-inch cas 1698 ft. Pat Hudson's Gardner 1, 1-22-11, dk. B. L. Slack 1, 36-23-11, set 6-inch cas 2680 ft, 4 ft sand pumping 20 bbls oil 600 bbls sw, td 2741 ft. Magnolia Pet. Co.'s Scroggins 3, 1-22-11, set 8¼-inch cas 2669 ft, swab stuck showing oil and sw, td 2707 ft. Mount Vernon O&G Co.'s Pardee 3, 3-22-11, set 6⅝ cas 2635 ft, 4 ft sand sr td 2653 ft. Phillips Pet. Co.'s Bolinger A-1, 30-23-11, wosr td 3247 ft. Merritt & Merritt's Boucher 1, 17-23-11, coring 3200 ft. S. H. Rigg, Tr.'s, Slack 1, 36-23-11, set 6-inch cas 2745 ft.

WEST CARROLL PARISH—Palmer Corp.'s Marston A-1, 11-19-10e, set 5-inch cas 2592 ft, dr hard sand rock 2724 ft. H. L. Hunt's Brown 1, 4-21-11e, dr 2845 ft.

NEW MEXICO

CHAVES—Warman Oil Trust, Blackdome 1, ne 27-13s-24e, dr 1195 ft. Cactus Dev. Co., Sullivan 1, se 14-10s-26e, abn 2365 ft.

DE BACA—Matador Oil Co., Wood 1, sw 6-4n-20e, wtg for pipe at 2685 ft.

EDDY—Van Horn et al, se 18-19s-26e, sdtr 1660 ft. R. D. Compton, State 1, nw 2-20s-25e, dr 1640 ft. Henderson et al, Frier 1, nw 21-16s-31e, dr at 2755 ft. Lockhart et al, Parke 3, se 15-17s-30e, lcn. Leonard & Levers, State 2, 21-17s-29e, 9½M at 2283 ft. Pueblo Oil Co., Russell 5, nw 18-17s-31e, dr 2035 ft.

GUADALUPE — Los Angeles-Hollywood Synd., McMullen 1, se 24-5n-16e, rig.

LEA—Shell Pete Corp., State 1, ne 32-18s-38e, cas 2765 ft. Shell, State 2, nw 19-18s-38e, dr 1860 ft. Empire, Closson 1, se 6-22-36, dr 3955 ft. Walker et al, Terry 2, se 10-19s-38e, spudded and sd. Humble O. & R. Co., Lindley 3A, sw 13-25s-36e, sd indefinitely. Bordages et al, Hughes 1, 27-19s-38e, pipe trouble 4012 ft. Morton et al, State 1, nw 32-11s-38e, dr 4605 ft. Barnsdall Corp., 1, se 28-16s-38e, plugged 5160 ft. Cranfils & Reynolds, State 1-C, sw 16-23s-36e, test at 3720 ft. Fisher &

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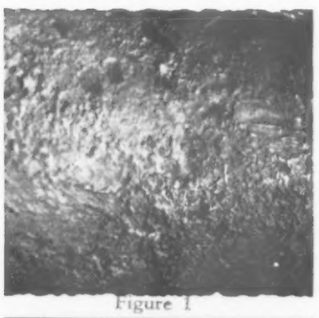

Figure 1

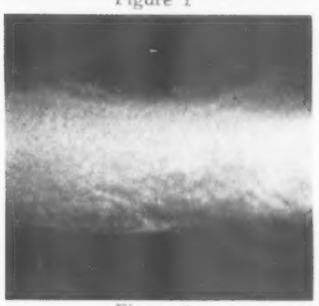

Figure 2

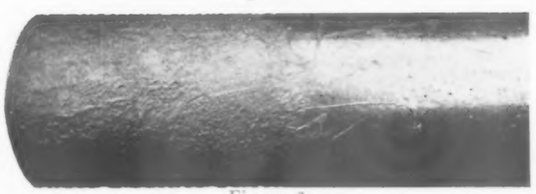

Figure 3

Figure 1, pipe line coated with "A" Enamel. Figure 2, pipe line PROTECTED by RESISTCOR, the high-fusion-point, low-penetration Enamel. A side-by-side test on lines of a major company. Both enamels under ground, in same locality, same length of time. Figure 3, an end-to-end test on a major company's line. Left end coated with "D" Enamel. Right end PROTECTED by RESISTCOR. Both enamels under ground same length of time. "YOU be the judge!"

THE real test of a pipe line coating is its ability to withstand soil stress and all other underground conditions.

The illustrations on this page — made from *unretouched* photographs — show not what we believe or hope, but what RESISTCOR *does* in actual service, in extremely destructive soils and—

—in end-to-end and side-by-side comparisons with other coatings!

The two tests illustrated were made in different areas on lines of major pipe-line companies. In each case, RESISTCOR and the other enamel were applied the same day, in the same locality, and under identical conditions. Months later, the lines were uncovered and photographed simultaneously.

Pipe-line employees will vouch for these statements and identify the photographs. Furthermore, we stand ready to uncover the same and other pipe lines as proof that RESISTCOR is pipe-line *protection*.

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TULSA

MEMPHIS HOUSTON

Lowrie, State 1, nw 11-18s-36e, dr 4035 ft. Texas-Pacific, State 4, 21-23s-36e, dr 715 ft. Walker et al, Terry 2, se 10-19s-38e, spudded and as. Texas-Pacific, State 1G, 24-18s-37e, dr 1160 ft. Cranfill & Reynolds State 1-D, lot 6, sec 3-21s-33e, sulphur water 4046 ft, standing. Hobbs High Oil Co., State 1, se 35-18s-38e, standardizing 276 ft. Ohio Oil Co., Northrop 1, se 32-18s-39e, dr 2833 ft. Ohio, McDonald 1, 15-29s-36e, 16-inch cem 645 ft. Maljamar O. & G. Corp., Baish 3, nw 21-17s-32e, dr 1115 ft. Midwest Ref. Co., State 36, sw 10-19s-38e, dr 550 ft. Midwest, State 13, nw 15-19s-38e, dr 200 ft. Midwest, E. H. and M. Byers 33, ne 4-19s-38e, dr 400 ft. Ohio Oil Co., State 1, 30-18s-38e, 20-inch cas cem 110 ft. Landreth Prod. Co., State 1, se 7-18s-38e, ready to spud.

McKINLEY—J. W. Halsell, Santa Fe 1, 17-18s-9w, ur to 3205 ft. San Juan Coal & Oil Co., 1, se 21-18n-9w, sd 2205 ft. Williams et al, Santa Fe 1, se 19-19n-8w, co at 1900 ft. Cravens et al, 7-18n-9w, plugged back from 575 ft, water well at 370 ft.

RIO ARRIBA—Berringer et al, Hartman 1, ne 8-29n-7w, sd at 825 ft. San Juan Pete Co., Government 1, sw 14-30n-7w, sd 270 ft.

SAN JUAN—Dorothy Oil Co., Terwilliger 2, 29-30-9w, prep to ream to 1220 ft. Southern Union Gas Co., Day 1, se 20-28n-10w, sd 1455 ft. Blackrock Oil Co., Blackrock 1, se 11-25n-13w, wtg on extension permit with 1550 ft. Childers Drlg. & Pur. Co., Westwater 2, nw 24-31n-16w, sd 2525 ft. Reserve Oil Co., Shaffer 2, ne 1-21n-14w, sd 780 ft.

SANDOVAL—Mayflower O&G Co., Marion 1, se 23-20n-2w, dr 1715 ft.

SAN MIGUEL—Pioneer O&G Co., Thunderbird 1, nw 14-15n-16e, wtg dr line 2355 ft. Starr Oil Co., Adams 1, ne 25-17n-17e, 6⅝-inch at 3271 ft. Cibola Pete Co., Crown 1, se 9-13n-14e, ready to resume 320 ft. Hershfield Dev. Co., Cabra Springs 1, ne 21-12n-22e, stand 730 ft. Benedict et al, Wilson 2, nw 25-17n-16e, ready to spud.

SOCORRO—Lockhart & Co., Stackhouse 1, 14-3s-6e, dr 2320 ft.

TORRANCE—Williams et al, Staplin 1, ne 16-8n-10e, stand 2035 ft. J. B. Witt O&G Co., Kutchem 1, 12-7s-7e, dr 250 ft.

VALENCIA—Rio Puerco Oil Co., N. M.-Ariz. Land Co. 2, ne 13-6n-2w, wtg for pipe 3145 ft. Acme Oil Co., N. M.-Ariz. Land Co. 1, 26-6-3, dr 4675 ft. Harlan et al, Harlan 1, 5-6n-2e, sd 4107 ft.

MONTANA

BIG HORN—Montana Prod. Co., Lynde 2, 21-6s-35e, sd 3056 ft.

CARBON—Atlantic Oil Co., 20-7s-24e, sd in Madison 1840 ft.

CARTER—Carter & Co., 1, nw 11-2n-58e, to test 2030 ft. Montesota Oil & Dev. Co., 1, se 7-8s-58w, set cas 930 ft. Poss ePte Co., nw 7-8n-58w, sd 2505 ft.

CASCADE—Piegan et al., 36-20n-3w, dr 2200 ft. Eden Oil Co., 1, sw 27-18n-4e, sd 1326 ft.

CUSTER—Montana Belle Oil Co., 1, ne 28-8n-45e, sd 4562 ft.

DANIEL—Whitetail Oil Synd., 1, nw 10-36n-50e, sd 1467 ft.

FERGUS—Melton Corp., sw 24-21n-17e, set cas 2700 ft, prep to resume.

GALLATIN—California Co.'s Ringling 1, se 35-5n-7e, dr 4310 ft.

GARFIELD — Montana Corp., State 1, ne 36-16n-39e, reaming, td 4005 ft.

GLACIER—Glacier Oil Co., Omsberg 1, nw 33-35-5w, mvg in. Kootenai O&G Co., 1, 13-35n-6w, fsh bit. Fulton Pete Corp., Hannah 1, ne 28-36n-12w, mvg in.

LIBERTY — Square Deal Oil Co., Federal Land Bank 1, 1-32n-7e, may abn 3461 ft. Thompson, Thompson 1, sw 7-34n-4e, dr 2350 ft. Northland O&G Co., Yurman 1, 35-33n-6e, runn pipe 1350 ft. Sunburst O&R Co.'s Watford 1, ne 18-36n-60, repair boiler 1200 ft.

MUSSELSHELL — Minnesota - Flatwillow, Ivanhoe Dome 1, 7-11-31, resuming.

PETROLEUM—Minnesota- Flatwillow 2, sw 5-12n-25e, dr bel 1560 ft. Oregon-Flatwillow Oil Co., 1, 3-13n-26e, dr below 200 ft.

PONDERA — Hiland-VanDaele's Kendall 1, ne 35-30n-3w, sd 4215 ft. Miller Bros.' Bruins 1, nw 17-28n-1w, rig up.

ROSEBUD—Prairie O&G Co.'s N. P. 1, 9-10n-38e, sd 2310 ft. Prairie's N. P. 3, 26-10n-38e, run cas 2410 ft. Prairie's N. P. 4, 28-10n-38e, sd 65 ft.

SHERIDAN—Sheyenne O&G Co.'s 1, nw 15-36n-53e, to res 1400 ft.

SWEETGRASS—Shoshone Consolidated's N. P. 1, nw 23-2n-15e, sd 5805 ft.

TETON—Texas Prod. Co., se 2-26-4w, mvg in. Andover Oil Co.'s Carlson 1, ne 5-24n-4w, sd 150 ft. Newman et al's Fitzgerald 1, 26-32n-1w, rig up. Rocky Mtn. O&G Co.'s Salmond 1, ne 4-23n-8w, runn cas to so water, td 1400 ft. Earl Oil Corp., 1, se 22-22n-82, resuming 660 ft.

TOOLE—Monalta Oil Co.'s Buckley 1, se 1-37n-4w, 1500 ft oil in hole 2485 ft. Monalta Oil Co.'s Buckley 2, sw 1-37n-4w, rig. Anaconda Pete Co.'s Batholote 1, 1, ne 19-36n-2w, pull pipe to sterrm. John Thomas et al's Buckley 1, ne 1-37-4w, dr 1645 ft. Black Gold Pete Co.'s Syrs 1, sw 30-36-28, res 1655 ft. F. & F Oil Co.'s Swenson 1, se 12-33-1e, gas well at 751 ft. Mid-Continent O. & R. Co., Farbo 2, ne 2-37-4w, dr 1900 ft.

UTAH

BOX ELDER—Utah-Pennsylvania Oil Co., Penrose 1, nw 3-10n-4w, dr 3410 ft, last report. Leonora Mining & Milling Co., Swoboda 1, nw 9-8n-7w, co 2755 ft.

CARBON—St. Thos. Oil Co., 1-14s-9e, fsh 2300 ft. Price River Pete Co., Price 1, ne 16-14s-10e, td 310 ft, last report.

GRAND—Crescent Oil Synd.'s McCarthy 1, sw 27-21s-19e, gas at 2045 ft, td 2200 ft. Utah Southern Oil Co., State 1, 26-21s-33e, dr 1650 ft. Cisco Springs Synd., Moss 1, sw 9-20s-23e, fsh bit 2140 ft.

KANE—Midwest Ref. Co., Parry 1, se 14-39s-1w, dr 3420 ft. Beaver Valley Oil Co., Blackrock 1, ne 20-25s-9w, fsh pipe 3500 ft. Beaver Valley, Blackrock 2, se 19-25s-9w, sd 600 ft.

SAN JUAN—Boulder Knoll Oil Co., Boulder Knoll 1, nw 17-34s-25e, stand 2640 ft. Continental, Boundary Butte 1, se 22-43-22, set cas 5612 ft.

UINTAH—Home Oil Co., Spahr 1, se 8-5s-21e, sd 1165 ft. Maud Ellen Oil Co., Neal 1, se 28-3s-21e, dr 1850 ft. Western Venture Corp., Krumvieda 1, se 6-5s-21e, sd 1515 ft.

UTAH—Diamond Oil Co., 1, nw, 16-8s-5e, dr below 1700 ft.

COLORADO

ADAMS—N. M. Slatt, Hill 1, se 27-35-64w, stand cem 1300 ft.

ARAPAHOE—McDebb Drlg. Co., Fitzsimmons 1, 7-45-66, sdtr cas 4936 ft.

ARCHULETA — Outwest Investment Co.'s Fitzhugh 1, sw 34-33n-1e, ready to spud.

BENT—Continental's Pipe Springs 1, se 27-27-49, dr 5881 ft.

BOULDER—Reliance Oil Co.'s Erickson 1, nw 33-2n-70w, dr 3085 ft.

DOLORES—Transcontinental's Glade 1, nw 30-41n-16w, co 5900 ft.

ELBERT—Belmont Oil Co.'s Maher 1, se 4-6w-59w, standardizing 3720 ft.

FREMONT—Weatherville Oil Co.'s State 1, nw 16-18-69, sd 1214 ft. Continental's Harding 2, sw 21-18-70, sd 2530 ft. Hammond & Roscoe's Beltrame 1, se 1-19s-70, sd 1800 ft.

JACKSON—Midwest's Rich 21X, nw 9-6n-80w, sd for winter 3381 ft. P. & R.'s Hendershot 1, ne 2-6n-81, pull cas to ur 3610 ft.

JEFFERSON—Ruby Hill O&G Co.'s Braden 1, se 24-4s-69w, prep res 3568 ft.

HUERFANO — Parker Club and Kinney-Coastal's Fee 1, se 4-28s-68w, sd 4116 ft. Elliott et al's Abeyta 1, nw 31-27s-65w, lcn.

LAS ANIMAS—Trinidad Dev. Co.'s Flontz 1, se 23-32-63, se 5 3/16-inch at 2700 ft., water trouble. American Helium Gas & Oil Co.'s Boling 1, 3-29-60, lost hole at 160 ft, and skidding rig.

LARIMER—Mosher et al's Reed 1, nw 28-4n-69w, bailer lost 3160 ft. Barrows et al's Barrows 1, se 7-11-68, sd 2310 ft. Continental's Scott 5, nw 6-9n-68w, dr 3550 ft. Deininger et al's Rembey 1, ne 35-4n-70w, to resume at 354 ft. Outwest, Inc.'s Hertha 1, nw 21-4n-69w, running 8¼-inch casing at 2820 ft, with 1,000,000 ft gas.

LA PLATA—McGarr ePte Corp.'s Red Mesa 1, ne 27-33n-12w, dr 770 ft. Detroit Oil Assn.'s Olbert 1, se 9-35n-12w, stand 2462 ft.

LINCOLN—Kelly Oil Co.'s State 1, ne 36-14n-57w, sd 3350 ft to install new boiler.

MESA—Argo Oil Co.'s Hoel 1, ne 23-8s-104w, dr 2920 ft.

MOFFAT—McLaughlin et al's Williams 1, 2-3-92, abn 4515 ft. Vermillion O. & G. Synd.'s 1, se 23-9n-100w, resuming at 642 ft. Texas Prod. Co.'s Berlin 1, ne 18-12n-100w, dr 2365 ft. Texas Prod. Co.'s Knowlton 12, 33-5n-91w, rig. Midwest's Hannawalt 24, 4-6n-92w, run 10-inch at 2390 ft. Mtn. Fuel Supply, 25-12-101, dr 2570 ft.

MONTROSE—Uncomphagre O. & G. Co.'s Colorado 1, nw 27-50-10, resuming at 2031 ft.

MORGAN—Ind. Ter. Illum. Oil Co.'s State 1, ne 16-1n-57w, dr 315 ft.

PUEBLO—Beulah Dome Co.'s Hedland 1, se 7-23-67w, sw 932 ft.

RIO BLANCO—Texas Prod.'s Potter 1, se 30-2n-69w, fsh 2984 ft. White Eagle's Fordson 1A, se 9-2s-96w, dr 3535 ft.

ROUTT—Gillespie et al's Omholt 1, se 29-4n-87w, ready to spud.

WELD—Platte Valley Pete Corp.'s Patterson 1, se 24-6n-61w, dr 5365 ft.

WASHINGTON—Middlemist Oil Co.'s Middlemist 1, se 14-4s-56w, set 15½-inch casing at 1030 ft.

YUMA—Phillips Pete's Andrews 1, nw 3-2s-42w, fsh 5055 ft.

WYOMING

BIG HORN—P. & R.'s Gov't 3, 24-56-98, sd 4183 ft. Westland Oil, Inc.'s 24-54-95, sd 360 ft. Wisconsin Holdings, 4-55-97, sd 665 ft. Yellowstone Pete Co., 7-57-97, dr 2780 ft, last report.

CARBON—P. & R.'s 2-19-88, sd 4562 ft. C. E. Bivins et al's Baggs 1, 35-13-92, res 2200 ft.

CONVERSE—Pioneer Oil Co., 5-31-70, dr below 3200 ft. Jno. Ackard, 21-31-69, res 3461 ft.

CROOK—W. F. Clark et al, 29-49-66, lcn.

FREMONT—Texas Prod. Co., State 1, 36-34-95, hfw 3248 ft, fsh tools.

HOT SPRINGS—Midwest, 8 Weeks, 6-44-98, co 1540 ft. Ohio's Smith 1, 8-46-99, dr 4340 ft. Gebo Cons., 1, se 23-44-95, sd 1245 ft. C. F. Robertson et al's se 17-43-92, sd 450 ft .

JOHNSON—United Oil Co., 7-47-82, sd 1360 ft. R. C. Tarrant, 4-43-82, sd 600 ft. Dome Synd., 3, 4-43-82w, sd 720 ft.

LINCOLN—Midwest, Grey's River 1, 25-37-117, sd 1731 ft. Midwest, Waterfall 1, 35-22-115, sd 3510 ft. Mtn. Oil Corp., 36-25-115, sd 100 ft.

NATRONA—Midwest, Midway 1, se 23-35-79, bldg rig. Casper Prod. Co., 36-36-1, bldg rig.

PARK—P. & R., Pitchfork 1, 14-48-102, dr 2081 ft. Henderson Prod. Co., 31-58-99, sd 3000 ft. Resolute Oil Co., 17-27-101, dr 4607 ft. Cody Pete Co., Danker 1, se 22-57-98, 7M show.

SWEETWATER—Vermillion Oil Co.'s 1, sw 16-12-99, 1M gas at 2400 ft.

UINTA—California Co., U. P. 1, 7-17n-119, dr 4810 ft.

WESTON—Gose Synd., 28-47-65, co and dr 4862 ft. Updike et al's Fiddler Creek 1, 11-45-64, resum at 1000 ft.

IDAHO

BANNOCK—Norton Bros. et al, Marsh Valley 2, lot 5, sec 19-10s-37e, dr ahead from 2650 ft.

CLARK—Monida Oil Co., Beaver Dome 1, nw 32-14n-36e, sd 1140 ft.

POWER—Gem State Co., Arbon Valley 1, nw 2-11s-33e, sd 3800 ft.

TETON—Grand Teton Oil Co., Horseshoe 1, se 33-5n-44e, set 8¼-inch at 2310 ft. Teton Land & Leasing Co., Bevan 3, se 28-5n-44e, dr 1575 ft.

SOUTHERN CALIFORNIA

COMPTON—California Well Drilling Co.'s Del Amo 1, sd 8500 ft. Crimson Pet. Co.'s Vedder 1, rigging up rotary.

FULLERTON — Standard's Bastanchury 1, dr shale 5228 ft.

GARDENA—Ohio's Fish 1, fsh 3768 ft.

HERMOSA — California-Ventura Oil Co.'s Smith 1, dr shale 6520 ft; Holston 1, 31-3-14, new lcn.

LA HABRA—R. C. Rucker's Grazide 1, fsh for dr pipe 3665 ft. Union's Sansinena 11, co 3075 ft.

NEWHALL—Consolidated Oil Co.'s Hammond 1, dr shale 1477 ft. H. C. Hicks' Lillie 1, lcn. Pico Dome Oil & Gas Co.'s No. 1, dr

shale 838 ft. Pioneer Pet. Co.'s Cannon 1, loosening drill pipe, td 2840 ft. Southern California Drilling Co.'s Needham 3, rigging up rotary. Yorke and Lockhart's Clampitt 2, dr shale 907 ft.

NEWPORT—H. L. Hall's No. 1, dr shale 440 ft. Standard's Sickler 1, 26-6-10, new lcn.

POMONA—Grimes-Girrard Oil Synd.'s No. 1, dr shale 1420 ft.

PUENTE—Western Gulf's Diamond Bar 1, 28-2-9, 9-inch cas cmt 3690 ft, will not test.

RICHFIELD—Weber & O'Brien's Brown 1, trying to locate water, td 5350 ft.

SAN FERNANDO—Shell's Andrews 1-1, dr hard sand 1900 ft.

SOUTH LOS ANGELES—William Diller's No. 1, 8-3-13, dr shale 5820 ft.

TELEGRAPH CANYON—Union's Rimpau 1, 13-3-9, dr 4175 ft.

RIVERSIDE COUNTY—Trabuca Oil Co.'s No. 1, 28-4-6, dr black sand 4390 ft.

SAN BERNARDINO COUNTY—Marcell Pet. Co.'s Marcell 1, 31-2-8, sd 1655 ft.

SAN DIEGO COUNTY—Borderland Exploration Co.'s Point Loma 1, 30-16-3, dr hard gray sand 2432 ft.

NORTHERN CALIFORNIA

Company, Well and Location	Initial Production Bbls.	Depth
ORELLA—		
Shell's Cov. 2	*	2025
Rutherford 3	*	2330
SANTA MARIA—		
Shell's Carcaga 1	*	5713
MADERA COUNTY—		
George F. Getty's Chow Chilla 1, 8-10-14	*	4344

KERN COUNTY

BELRIDGE—J. H. Kennedy's No. 1, 5-29-21, sr 1610 ft. Rio Grande's Garcia 1, 18-28-22, co 1950 ft ,td 3680 ft. K. C. Wallace's 1, 32-29-21, dr shale 2838 ft.

BUTTONWILLOW—General Pet.'s Morris 1, 6-28-23, completing as gas well, td 2706 ft. Milham Exploration Co.'s Kern 6, 8-28-23, m on cas 4945 ft; Kern 7, 5-28-23, rig; Kern 8, 5-28-23, rig; Kern 9, 5-28-23, rig; Kern 10, 5-28-23, rig.

EDISON—F. M. Sayre's 1, 5-30-29, m 4220 ft. Shell's No. 2-1, 33-29-29, dr shale 3840 ft.

JASMINE—Helen Pet. Corp.'s No. 1, 23-25-27, dr shale 2066 ft.

LERDO—Shell's Lee 1, 23-28-26, rig.

McKITTRICK—Ozena Oil Co.'s Kendon 2, 27-29-21, dr oil sand 2744 ft. Ohio's M. M. 1, 32-20-22, dr shale 4814 ft.

SAN EMIDIO—H. A. Bardeen's Klipstein 1, 18-10-23, dr shale 784 ft; Ramsey 1, 10-10-23, dr oil sand and shale 1200 ft.

MIDWAY—Standard's Mascot 1, 26-32-23, 5¾-inch cas cmt 9302 ft, td 9629 ft, deepest hole ever drilled. Union's Reeves 1, 27-32-23, dr oil sand 2322 ft.

ROUND MOUNTAIN—Gerrard and Phillips' 1, 32-27-29, fsh for tools 1640 ft.

SEMITROPIC—Shell's Williams 1, 17-27-23, new lcn.

SHALE HILLS—William Gilbert's No. 1, 35-26-18, will deepen from 750 ft. Girard Oil Co.'s Watkins 1, 28-26-18, dr brown shale 3336 ft.

TEMBLOR HILLS—Shell's Gonyer 1, 32-32-23, dr shale 3340 ft.

WEED PATCH—Shell's Porter Day 1, 29-30-29, dr shale 3378 ft.

SANTA BARBARA COUNTY

BUELL CANYON — Union's Buell 1, dr shale 4462 ft.

CAMPBELL'S POINT — Bolsa Chica Oil Corp.'s Augur 191-1, pier completed.

CARPENTERIA — Continental's Bailard 124-1, 33-4-25, dr out cmt below 13 3/8-inch cas at 3120 ft, water not shut off. Getty's McDonald 1-A, dr hard sand 370 ft.

CASITAS PASS—Standard's Shepard 1, 26-4-25, dr shale 2042 ft.

CASMALIA — Wildcat Oil & Royalty's Donovan 1, 20-10-35, dr shale 4428 ft.

EL TORO—Shell's Fithian 1, 18-4-25, dr hard sand 2707 ft.

GATO RIDGE—Barnsdall's Teg.-1, 9-8-32, rigging up.

GOLETA — Walter Barnhart's Pomatto 1, 1-4-29, will make production test, td 2155 ft. General Pet.'s Crandall 138-1, dr shale 3458 ft; More 2, backing off drill pipe, td 4327 ft.

LOMPOC — Ohio's Hollister 1, 2-6-34, dr shale 4275 ft. Prairie Oil & Gas' Shyvers 1, 11-7-35, dr shale 1933 ft.

CAPITAL ORELLA—General Pet.'s Erburu 4, dr shale 1312 ft.

POINT CONCEPCION—Standard's Gerber 1, standing for test, td 4370 ft. Universal Consolidated Oil Co.'s 1, 30-5-34, dr shale 1555 ft.

PURISSIMA — Vaqueros Major Oil Co.'s Arnold 1, 5-7-33, lcn.

SANTA MARIA—O. C. Field's Norswing 1, 8-9-33, dr shale 1875 ft.

SANTA YNEZ—Deuel & Cole's Brinkinhoff 1, rig.

Black Hills Petroleum Company's wildcat well completed on the Barker Dome structure, NW Section 34-6s-2e, about 27 miles northwest of Hot Springs, South Dakota. The well was drilled to a depth of 1328 feet and is believed to be capable of producing from 25 to 50 barrels of oil per day

VENTURA COUNTY

CAMARILLO—Calleguas Oil Synd.'s Leonard 1, 6-1-20, dr 730 ft. Camarillo Oil Synd.'s Calleguas 1, dr hard sand 265 ft.

CONEJO—American Oil Co.'s No. 1, 33-2-20, dr rock 1504 ft. Triunfo Oil Co.'s No. 1, 24-1-19, dr hard sand 1717 ft.

FILLMORE—General Pet.'s Burson 1, 6-3-19, dr hard sand 810 ft.

OJAI — California-Ventura Oil Co.'s La Crosse 1, co 5525 ft.

PIRU—Bolsa Chica Oil Corp.'s Snow 1-A, 4-4-18, dr brown shale 2144 ft. E. A. Fennell's Lankershim 1, 13-4-19, dr shale 1555 ft.

HOPPER CANYON — George H. Hadley's No. 1, 13-4-9, dr hard sand 770 ft.

RINCON—Associated's Snowball 1, 19-4-24, dr gray sand 1725 ft.

CALABASAS—Olympic Oil Corp.'s Calabasas 1, 18-1-17, dr hard sand 3007 ft.

SANTA PAULA—Empire Oil Co.'s Steen 4, 13-4-21, dr hard sand 3265 ft.

SATICOY—Standard's Citrus 5, 10-2-22, re-dr 7875 ft.

SOMIS—Shell's Everett 1, new lcn.

VENTURA—Prairie Oil & Gas Synd.'s Sexton 1, 30-3-22, re-dr 4275 ft.

MISCELLANEOUS

FRESNO COUNTY—Rio Grande's Edison 1, 35-13-16, dr shale 2710 ft. Fresno-Madera Oil Co.'s No. 1, 18-12-12, rigging up rotary, td 4290 ft. Western Gulf's Welsh 1, 26-15-12, dr shale 4478 ft.

KINGS COUNTY—Wellport Oil Co.'s No. 1, 9-24-17, dr hard sand 3528 ft. J. E. O'Donnell's No. 1, 7-23-20, dr hard sand 3460 ft. Richfield's Oceanside 1, 33-22-16, new lcn.

MENDOCINO COUNTY—Twin State Oil Co.'s Soldani 1, 14-12-17, dr shale 3200 ft.

MONTEREY COUNTY — Standard's Piedmont 1, 23-22-7, dr shale 4222 ft. Union's Paige 1, 8-22-8, sd 3215 ft.

SAN LUIS OBISPO COUNTY—Panorama Oil Co.'s Panorama 1, 7-31-21, fsh for 6¼-inch cas 4010 ft. Paso Robles Synd.'s Emerick 1, 34-27-15, sd 3805 ft. Midwest Oil Co.'s Hately 1, 34-31-15, dr hard sand 4078 ft. Pismo Dome Oil Co.'s Pricco 2-A, 5-31-13, dr sandy shale 2069 ft. Texas Pacific Coal and Oil Co.'s No. 1, 25-32-14, sdtr reamer 4000 ft.

TULARE COUNTY—Terra Bella Oil Co.'s Gardiner 1, 35-22-27, 8¼-inch cas cmt 830 ft, td 863 ft.

NEBRASKA

U. S. Drilling Co.'s Brunkle 1, c nw sw ne, 2-3n-13w, rig.

Graham Bros.' Edwards 1, nw sw 13-2n-22w, dr 3250 ft.

Southwestern Petroleum Corporation's Montague 1, se sw sw, 28-1n-22w, dr 1750 ft.

Mid-States Exploration's Platt 1, c se, 3-1n-11w.

TENNESSEE

DECATUR COUNTY—Chester County O&G Co.'s Montgomery 1, set 6-inch cas 1045 ft, dr 1832 ft.

OKLAHOMA

WOODS COUNTY—T 28n, R 16w, Sec. 23, Peerless Oil Co.'s Cromwell 1, c nw ne, dr 5318 ft.

GRANT COUNTY—T 28n, R 7w, Sec. 27, Gypsy's Bilderback 1, se c Wilcox 5647-59 ft, hfw tw 6074 ft, dry and abn. T 28n, R 4w, Sec. 12, Boucher et al's Dedman 1, sw c se, td 4735 ft, dr by csg.

WOODS COUNTY—T 27n, R 16w, Sec. 33, Sinclair's Share 1, c ne sw, td 6790 ft.

ALFALFA COUNTY—T 27n, R 11w, Sec. 12, Smith Bros., Forbes 1, ne c se nw nw, sd 1420 ft.

KAY COUNTY — T 27n, R 2e, Sec. 17, Blankenship Pet. Co.'s Hansen 1, sw c nw sw, spd and sd.

HARPER COUNTY—T 26n, R 24w, Sec. 14, Sinclair's Howell 1, c sw sw show oil 6711-16 ft, dr 8402 ft.

GRANT COUNTY—T 26n, R 3w, Sec. 23, Otstot Dev. Co.'s Tapor 1, ne c se, show oil 4355-4415 ft, dr 4993 ft.

KAY COUNTY—T 26n, R 2e, Sec. 32, J. A. Vincent et al's McNeal 1, nw c ne, sd 2795 ft.

HARPER COUNTY—T 25n, R 20w, Sec. 12, Empire's Bruce 1, sw c ne ne sw, dr 2765 ft.

WOODS COUNTY—T 25n, R 15w, Sec. 10, Bu-Vi-Bar et al's Fee 1, se c sw, sd 6104 ft.

GRANT COUNTY—T 25n, R 4w, Sec. 22, Cowden's Vollmer 1, ne c se ne sw, lost tools 5640 ft, sd.

ALFALFA COUNTY—T 24n, R 11w, Sec. 14, J. V. Bailey et al's Acre 1, c sw ne, water at 4649 ft, dr plugs at 4660 ft, water, sd.

GARFIELD COUNTY—T 24n, R 6w, Sec.

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Another section of 22 inch main line Southern Natural Gas Corporation System. Ford, Bacon and Davis, Inc., Engineers, Williams Bros., Inc., Contractors.

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9, Pulse & Beamer's White 1, se c nw, hfw 4730-4800 ft, td 5556 ft, fsh job.

WOODWARD COUNTY — T 23n, R 17w, Sec. 23, Prairie & Transcontinental's Woodward 1, ne c dr 6475 ft.

GARFIELD COUNTY—T 23n, R 4w, Sec. 32, Shell et al's Loomis 1, c nw nw, dr 5165 ft.

NOBLE COUNTY—T 22n, R 1w, Sec. 28, Gypsy et al's Berstram 1, se c nw, dr 4010 ft.

WOODWARD COUNTY — T 21n, R 19w, Sec. 19, Burgoyne Bros.' Merklin 1, sw c se ne, sd 1910 ft.

MAJOR COUNTY—T 20n, R 14w, Sec. 23, Keller et al's Horton 1, c ne ne, spd and sd.

GARFIELD COUNTY—T 20n, R 4w, Sec. 10, Continental et al's Brown 1, cel ne nw sw, 20M gas 5175-80 ft, dr 5900 ft, hole full oil.

BLAINE COUNTY—T 19n, R 10w, Sec. 13, Washoma Pet. Co.'s Phillips 1, c nw sw, sd 2945 ft.

LOGAN COUNTY—T 18n, R 3w, Sec. 33, Healy et al's Quier 1, se c sw, td 3970 ft, sd. T 17n, R 4w, Sec. 34, Currie et al's Katchor 1, sw c ne sw, cellar, sd. T 17n, R 1e, Sec. 22, Prairie & Slick's Simms 1, ne sw se, surface pipe set at 92 ft.

KINGFISHER COUNTY — T 16n, R 7w, Sec. 6, Gault Brown, Boch 1, c nw se (owdd) td 6022 ft, sd.

LOGAN COUNTY—T 16n, R 1w, Sec. 33, Prairie & Slick's Morgan 1, c nw ne, dr 1990 ft.

TEXAS COUNTY—T 6n, R 14e, c.m. Sec. 23, Argus Gas Co.'s Longston 1, c sw, r.u.r.

CIMARRON COUNTY—T 5n, R 5e, c.m. Sec. 27, Magnolia et al's School land 1, c sw nw spd.

TEXAS COUNTY—T 2n, R 18e c. m. Sec. 23, Palo Duro Oil Co.'s Groves 1, ne sw sw, co 350 ft.

KAY COUNTY—T 27n, R 4e, Sec. 20, Empire's Maple 1, sw c, dr 3515 ft.

OSAGE COUNTY—T 24n, R 5e, Sec. 28, Kay County Gas Co.'s 1, cnl sw sw, show gas 2495-2565 ft and hfw, 6-inch at 3408 ft. T 24n, R 5e, Sec. 24, Continental's 1, nw se se, Wilcox 3234-58 ft, water, hfw 3500 ft, sd 3549 ft.

PAWNEE COUNTY—T 23n, R 5e, Sec. 15, Cochran et al's McFadden 1, ne c sw, rig.

OSAGE COUNTY—T 22n, R 8e, Sec. 5, Peters & P. & R.'s 1, sw c ne, dr 1225 ft.

PAWNEE COUNTY—T 20n, R 5e, Sec. 22, J. M. Scott et al's Jones 1, sw c ne, rig and sd.

PAYNE COUNTY—T 18n, R 4e, Sec. 6, F. M. Marrs et al's Tietz 1, sw nw se, lcn. T 17n, R 4e, Sec. 4, Wheeler & Mote, Funnel 1, ne c se, dr 2685 ft.

LINCOLN COUNTY—T 17n, R 5e, Sec. 16, Ed Jilson et al's School land 1, se c sw, dr 3075 ft. T 16n, R 2e, Sec. 35, T. B. Slick's Hammer 1, se c sw nw, dr 4150 ft. T 16n, R 4e, Sec. 2, E. D. Prowant et al's Trowant 1, nw ne nw, r.u.r.

OKFUSKEE COUNTY—T 13n, R 9e, Sec. 14, Flynn & Morgan's Burton 1, ne sw se, dr 462 ft. T 13n, R 9e, Sec. 15, Erwin et al's Allen 1, se sw ne, dr 2780 ft. T 12n, R 9e, Sec. 36, Henry Oil Co.'s Harjo 1, nw c, fsh 2785 ft. T 12n, R 10e, Sec. 3, Sheppard et al's Sheppard 1, se nw sw, 4-inch at 3664 ft sd. T 10n, R 10e, Sec. 25, Transcontinental et al's Lasley 1, sw c nw, dr 2995 ft.

MUSKOGEE COUNTY—T 11n, R 19e, Sec. 21, E. Mills et al's Martin 1, nw c se, td 1001 ft, sd.

PITTSBURG COUNTY—T 9n, R 16e, Sec. 32, Pattison et al's McDuff 1, sw nw se, sand 5556-60 ft, co bridge.

HASKELL COUNTY—T 9n, R 18e, Sec. 10, Marion Oil Co., Sanders 1, nw ne sw, 2M gas 1800 ft, sd 2692 ft.

OKLAHOMA COUNTY—T 13n, R 3w, Sec. 17, Prairie & Slick's Dills 1, c se nw, dr 1875 ft. T 13n, R 3w, Sec. 35, Magnolia & Ramsey'-Johnson 1, ne ne sw, dr 5780 ft. T 13n, R 1w, Sec. 13, Tom Slick's Martin 1, c nw nw, td 6965 ft, pb to 6771 ft woc. T 12n, R 4w, Sec. 17, C. F. Cuniff, St. Joseph 1, sw ne sw se, dr 5426 ft. T 11n, R 2w, Sec. 3, Ryan Consolidated's Lawton 1, ne c nw, dr 5959 ft.

POTTAWATOMIE COUNTY—T 6n, R 3e, Sec. 36, Sykes et al's Cook 1, sw nw ne, rig.

CLEVELAND COUNTY—T 6n, R 1e, Sec. 20, Brownfield's Corbett 1, c sw ne, 9-inch at 5350 ft.

HUGHES COUNTY—T 9n, R 12e, Sec. 20, Canady et al's Canard 1, nw c sw, 6-inch at 3218 ft.

SEMINOLE COUNTY—T 6n, R 6e, Sec. 19, Superior's Morgan 1, se c sand 2766-68 ft, shot 5 and 10 qts 2775-90 ft, swabbed 35 bbls.

ROGER MILLS COUNTY—T 12n, R 24w, Sec. 23, Bucy & Stone, Williams 1, c sw, sd 2243 ft. T 11n, R 26w, Sec. 4, J. J. Rook's Davis 1, c nw ne, sd 2840 ft.

BECKHAM COUNTY—T 10n, R 22w, Sec. 29, Roy Johnson's Brewer 1, c nw, moving in tools.

CANADIAN COUNTY—T 10n, R 6w, Sec. 1, J. V. Bailey's Robinson 1, c ne nw, sd 150 ft.

WASHITA COUNTY—T 9n, R 20w, Sec. 10, Souther Inv. Co.'s Musie 1, nw c, dr 300 ft.

BECKHAM COUNTY—T 8n, R 22w, Sec. 20, Carson et al's Cenby 1, sw se ne, sd 1700 ft.

GREER COUNTY—T 7n, R 22w, Sec. 1, Roy Good et al's Cliffell 1, nw c, dr 730 ft. T 6n, R 24w, Sec. 17, I. T. I. O. et al's Fee 1, c ne fsh 2285 ft.

CADDO COUNTY—T 6n, R 13w, Sec. 8, Abernathy & Brown's Horton 1, se c 596 ft, lost hole.

HARMON COUNTY—T 4n, R 24w, Sec. 17, Harmon-Texas Oil Co., Headley 1, ne c, dr 1513 ft.

COMANCHE COUNTY—T 3n, R 9w, Sec. 3, Okla. Nat. Gas Co.'s Doebel 1, ne c sw sw sw, sd 1450 ft.

COTTON COUNTY—T 3s, R 9w, Sec. 8, Empire's Chambers 1, nw c se, dr 3535 ft.

PONTOTOC COUNTY—T 5n, R 6e, Sec. 8, Magnolia et al's Killcrease 1, sw ne ne dr 2800 ft.

HUGHES COUNTY—T 5n, R 11e, Sec. 15, J. J. Wright's Roberts 1, se c sw, rig.

GARVIN COUNTY—T 4n, R 3e, Sec. 10, C. R. Obermeyer, Stricklin 1, ne c sw, dr 2130 ft.

MURRAY COUNTY—T 2n, R 2e, Sec. 27, Chieftain Royalty Co.'s Hendricks 1, sw se nw, dr 400 ft.

ATOKA COUNTY—T 3w, R 10e, Sec. 18, Brookshire et al's Guinn 1, nw c sd 80 ft.

CARTER COUNTY—T 4s, R 2e, Sec. 32, Tex-Okla. Drlg. Co.'s Anderson 1, se ne se, dr 2580 ft.

BRYAN COUNTY—T 9s, R 9e, Sec. 36, W.

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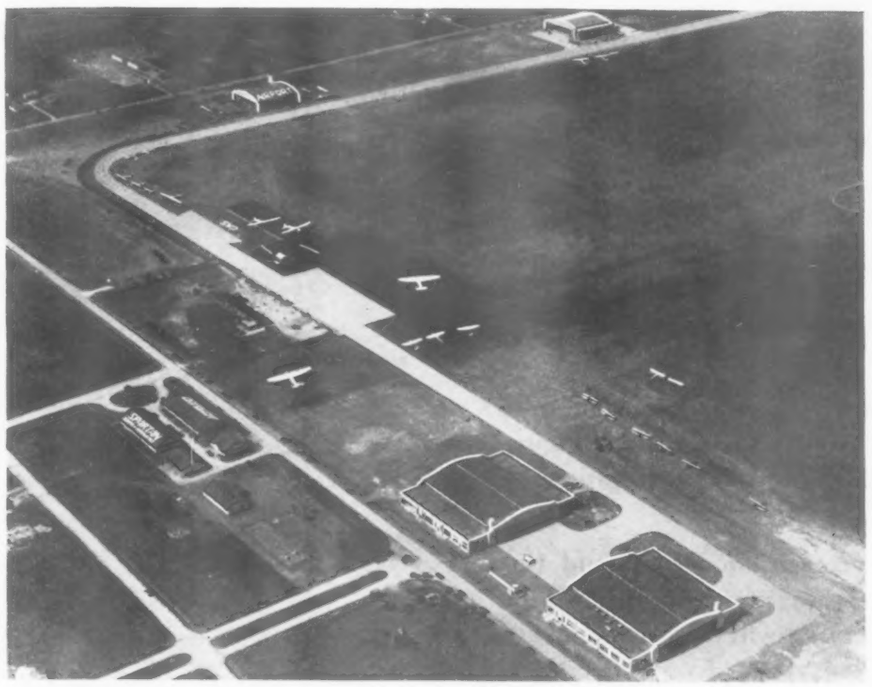

Airplane view of Tulsa Municipal Airport

TULSA has broken another world record.

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TULSA is the home of the Southwest Air Fast Express, now the second *largest* user of Ford trimotored planes and soon to be the first.

TULSA is the only city in the nation having more than one aviation school approved by the Department of Commerce as to both ground and flying school—has four flying schools.

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FEBRUARY RECORD	
LeBourget Airport, Paris, France	1,850 passengers
Croydon Airdome, Croydon, England	1,358 passengers
Templehofer Airport, Berlin, Germany	658 passengers
Tulsa Muncipal Airport, Tulsa, U.S.A. (Tulsa average—263 per day)	7,373 passengers
Tulsa's March Record (Average 300 per day)	9,209 passengers

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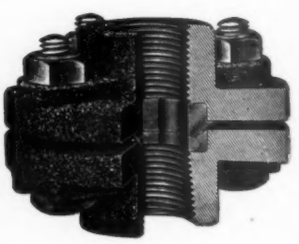

C. Endicott et al's Craig 1, c nw ne, fsh 2200 ft.

KANSAS

SUMNER COUNTY — Davidson et al's Strickland 1, sw se, 12-35-1w, rig. Hydraulic Oil Co.'s State Land 1, nw se, 22-34-43w, spd.

STEVENS COUNTY—Argus Gas Co.'s Armstrong 1, cnl, s½ n2, 16-34-39w, dr 2676 ft; Hicks 1, cse, 12-34-30w, dr 1200 ft. W. Sidwell et al's Kelly 1, sw ne, 16-34-38w, sd 1600 ft. Argus Gas Co.'s Parker 1, c ne 30-34-38w, sd 2650 ft.

BARBER COUNTY—Skelly's Temple Ranch 1, sw ne, 13-34-15w, top Viola 5241 ft, td 5246 ft, show oil, sd.

SUMNER COUNTY — Harris and Hahn's Hawkins 1, sw se, 9-24-1e, dr 4100 ft.

COWLEY COUNTY—Shawver et al's Curry, c nw sw, 26-34-2e, spd; Kratz 2, c sw nw nw, 26-34-2e, spd and sd.

STEVENS COUNTY — Argus Gas Co.'s Christopher 1, c sw, 11-33-39w, dr 2346 ft. McNabb et al's Ramey 1, c sw, 11-33-38w, r.u.s.t. 2675 ft. Argus Gas Co.'s Low 1, c se se, 16-33-40w, rog; Smith 1, c sw 13-33-37w, sd 2680 ft, 5M gas; Bride 1, c sw 25-33-37w, dr 530 ft.

CHAUTAUQUA COUNTY—Valentine Patterson 1, nw se sw, 2-33-9e, sd 1600 ft.

SEWARD COUNTY—Mangle's Younger 1, c se nw, 24-33-39w, spd and sd. Argus Gas Co.'s Hobble 1, c se 17-32-37w, sr 6-inch, td 2650 ft; Cross 1, c se, 19-32-37w, sd 2000 ft.

STEVENS COUNTY—Argus Gas Co.'s Porter 1, c se 21-32-37w, rig.

BARBER COUNTY—Phillips & Robertson's Powell 1, c se se, 11-32-10w, 5M gas, sd 4023 ft.

COWLEY COUNTY—Prairie's Desbaugh 1, se c lot 27, 18-32-8e, ur 5-inch, td 2785 ft. Roth & Faurot's Adams 1, c sw ne ne 19-32-8e, dr 1400 ft.

HARPER COUNTY—Beeler et al's Bear 1, c ne 21-31-6w, sd 1830 ft. Slick, Pryor and Lockhart's Peasel 1, 33-31-1w, dr 4111 ft, hfw.

SUMNER COUNTY—Hatfield et al's Dauber 1, ne c, 18-30-1w, spd and sd.

GRANT COUNTY—McKenna et al's Sullivan 1, ne c 12-29-36w, rog.

EDWARDS COUNTY — McKenna et al's Ralston 1, c ne 14-26-20w, rig.

FORD COUNTY—McNabb et al's Fowler 1, c se 26-27-22w, sd 400 ft.

BUTLER COUNTY—Martin et al's Flanigan 1, c sw se sw, 29-27-3e, sd 2910 ft.

GREENWOOD COUNTY—Mallory et al's Denchfield 1, se nw 12-27-9e, sd 660 ft. L. C. Mahan's Binns 1, se nw 23-27-11e, dr 775 ft. F. Konday et al's Rook 1, nw ne ne 7-27-12e, setg 6-inch 1820 ft.

PRATT COUNTY—Skelly's Johnson 1, ne sw 21-26-17w, dr 4952 ft. Wilcox's Unknown 1, sw nw 7-26-15w, dr 3235 ft. O'Haver & Jones' Gareke 1, c ne sw 7-26-14w, sd 4610 ft.

RENO COUNTY—Valerius, Stevens 1, c ne se ne, 6-26-7w, dr 2155 ft.

SEDGWICK COUNTY — Travender et al's McLean 1, se sw se, 23-26-1w, sd 975 ft. Johnson's Petrie 1, sw se 35-26-1w, ur 8-inch, td 2855 ft.

BUTLER COUNTY—Liggett's Guanther 1, c se ne nw, 29-26-7e, spd and sd.

HODGEMAN COUNTY — Swain et al's Kenthorne 1, c nw 21-25-24w, dr 2005 ft.

EDWARDS COUNTY — Dixie-Amerada's McCarty 1, sw 22-25-17w, running 6-inch at 4995 ft.

GREENWOOD COUNTY—John Harwood's Good 1, c sw nw ne, 36-25-13e, dr 1220 ft.

WOODS COUNTY—Bundy-Smith & ONeil's Ford 1, ne nw, 28-25-13e, spd and sd.

RENO COUNTY—Skelly's Melhouse 1, c se 34-23-17w, rig.

STAFFORD COUNTY — Gibson et al's Mueller 1, c sw 11-23-14w, ur 6-inch 4010 ft.

HARVEY COUNTY — Margaret Gay Oil Co.'s Brove 1, nw ne nw 29-23-1w, sd 3614 ft.

RENO COUNTY—W. C. McBride's Bacom 1, c sw ne sw 36-23-5w, dr 2740 ft.

BUTLER COUNTY—Elam et al's Hoplins 1, c se sw se, 26-23-4e, ru.

STAFFORD COUNTY—Midwest's Richardson 36, Sec. 36-22-12w, spd. Boucher's Grove 1, ne c 9-22-11w, dr 720 ft; Christensen 1, nw c 22-22-11w, ru.

RENO COUNTY—Witt et al's Olsen 1, se nw 14-22-6w, sd 4034 ft.

HARVEY COUNTY—Gypsy's Shine 1, se

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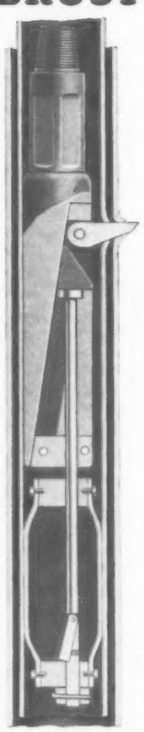

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GREENWOOD COUNTY — Kinsey et al's Bahr 1, se c 24-22-13e, spd and sd.

RICE COUNTY—Burgher, Fair 1, c se ne ne, 14-21-10w, sd 3545 ft.

McPHERSON COUNTY—Harry Skelly et al's Neufeldt 1, se ne 19-21-3w, rig.

LINN COUNTY—Ferguson & Hiatt's Carple 1, ne se sw, 22-21-22e, rig.

RICE COUNTY—McCulloch's Williams 1, c ne 35-20-8w, dr 2235 ft.

McPHERSON COUNTY—Millmack's Decker 1, nwc 11-20-3w, dr 2325 ft.

CHASE COUNTY — Steinbushel et al's Stephenson 1, ne sw 4-20-6e, dr 1530 ft. Transcontinental & Cheney's Wassell 1, ne se 26-20-9e, dr 1825 ft.

LYON COUNTY—Alladin & Phillips' Ratcliff 1, sec 29-20-10e, sd 1010 ft.

RUSH COUNTY—Danciger's Bell 1, c sw 16-19-8w, fsh, td 3498 ft.

MARION COUNTY—Marshall et al's Higgens 1, ne c 33-19-5e, rig.

CHASE COUNTY—Steinbushel et al's Cook 1, se c 195 27, 31-19-8e, dr 2545 ft.

RICE COUNTY—Tatlock et al's Ploog 1, c sw se 33-18-9w, ru. Urschell et al's Lipps 1, c sw sw 27-18-6e, sd 1990 ft.

McPHERSON COUNTY—Dixie's Miller 1, c ne se se 9-16-3w, lcn.

NESS COUNTY—Clark et al's Vaughn 1, se sw 28-17-22w, spd.

SALINE COUNTY—Dixie's Miller 1, c ne se se, 9-1613w, rig.

BARTON COUNTY — Hiatt & Durham's Wendt 1, nw c 17-16-2e, spd.

MORRIS COUNTY—Urschell et al's Scott 1, ne sw 6-16-6e, dr 2115 ft. Hankenson et al's Sessum 1, sw se 24-16-9e, rig.

ELLIS COUNTY—Rush Oil Co.'s Gatewood 1, nw 4-15-20w, fsh, td 3040 ft.

DICKINSON COUNTY—Cress et al's Sandon 1, ne c 12-15-2e, ru and sd.

TREGO COUNTY — Dixie & Amerada's Reitmeyer 1, c ne ne 19-14-21w, ur 6-inch 4030 ft, td 4077 ft. Imo O&G Co.'s Wambly 1, 7-14-14w, rig ru.

DOUGLAS COUNTY — Steinbushel et al's Unknown 1, sw ne nw, 34-14-21e, dr 880 ft.

ELLIS COUNTY—Streeter & Stearns' Leiker 1, sw ne 26-13-20w, sd 1295 ft.

RUSSELL COUNTY — Austin Drlg. Co.'s Rockefeller 1, se c 6-13-12w, spd.

DICKINSON COUNTY — Emery-Curtis & Bryan's Hevner 1, c nw se 31-13-3e, dr 2012 ft. Kroeger et al's Dische 1, c nw ne ne 17-13-4e, hfw sd 2943 ft.

TREGO COUNTY—Day's Guyler 1, c sw ne ne 36-12-31w, sd and spd.

ELLIS COUNTY — Central Commercial's Helms 1, se ne 2-21-20w, sd 584 ft.

TREGO COUNTY—E. H. Morgan's Whitehair 1, nw se, 9-12-13, sd 1768 ft.

SHAWNEE COUNTY — Jenkins & Scott's Haden 1, ne se 8-12-14e, sd 1040 ft. Jenkins & Scott's Haden 1 se nw 10-12-17e, dr 1800 ft.

LEAVENWORTH COUNTY—Forrester et al's Yazel 1, cel se se 18-12-22e, setg 6-inch 1215 ft.

ELLIS COUNTY—Byrens et al's Fisher 1, nw se 4-11-20w, sd 1000 ft.

RUSSELL COUNTY — Gilbreath et al's Bratton 1, c ne 33-11-13w, sd 1010 ft.

SHAWNEE COUNTY — Jenkins & Scott's Sherman 1, nw ne, 28-10-15e, sd 985 ft.

ROOKS COUNTY—Krueger's Steis 1, nw se sw, 12-9-16w, sd 570 ft.

CLAY COUNTY—Chrisler, Tivier 1, se c, 19-8-3e, spd and sd.

GRAHAM COUNTY—Mandolin's Unknown 1, c se sw sw, 27-7-26w, spd and sd.

RILEY COUNTY — Derby-Skow Bros.' Lundstrum 1, ne 32-7-5e, sd 2270 ft. Grey et al's Smith 1, ne se 30-6-6e, sd 1970 ft.

NORTON COUNTY—A. H. Richards, Colby 1, c sw 17-4-21w, rig.

MARSHALL COUNTY—Swicker & Simcox, Remple 1, c n½ nw 22-4-9e, dr 1000 ft. Blazier et al's Runkel 1, se nw 13-2-6e, rig.

ARKANSAS

UNION COUNTY—
Lion O&R Co., McDuffie 1, 32-19-16 4506
Simms Oil Co., M. H. Simmons A-1, 10-18-13 . . . . . 350 3532

CALHOUN COUNTY—Tidal Oil Co.'s Freeman-Smith Lbr. Co. 1, 3-16-14, lcn.

COLUMBIA COUNTY — L. E. Parker's Franks 1, 25-19-22, sd 2831 ft.

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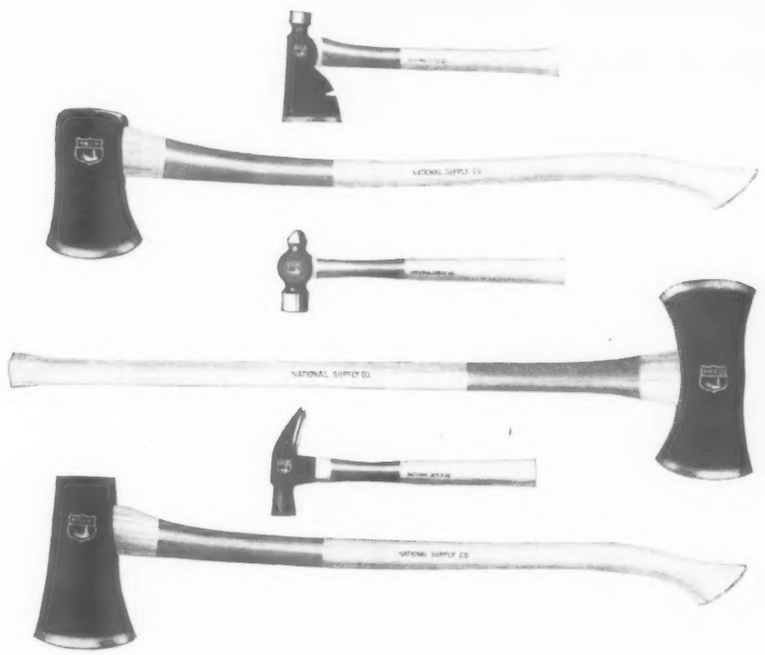

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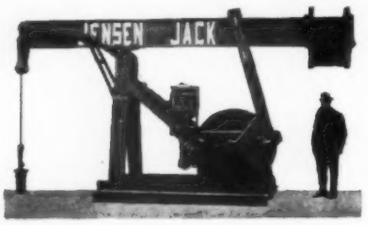

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CLEBURNE COUNTY—Cosden Oil Co.'s Donithan Lbr. Co. 1, 19-9-10, set 10-inch cas 2485 ft, dr hard rock 2883 ft.

DREW COUNTY—McClintock & Goedka's Ogle 1, 33-13-5, set 6-inch cas 1800 ft, sd wo 2625 ft.

FAULKNER COUNTY—Gold Creek O&G Co.'s Stermer 1, 17-4-13, TA 3872 ft; Stermer 2, 17-4-13, rigged up, wo.

FRANKLIN COUNTY — Ozark Nat. Gas Corp.'s McElroy 1, 15-8-27, arr plug back, td 3100 ft. Red Bank Oil Co.'s Edtin 1, 33-10-26, rig up.

GARLAND COUNTY—H. H. Given's Garrett 1, 1-13-19w, dr 3462 ft.

GRANT COUNTY—Jones & Watkins' Meek 1, 5-4-11, TA 1400 ft.

JOHNSON COUNTY—Ark. La. Pipe Line Co.'s Cline 1, 16-10-24, rig up. Blackwell O&G Co.'s Wyver 1, 21-8-23, jarring out 6-inch cas at 2100 ft, td 5600 ft.

LOGAN COUNTY—M. W. Greesom's Perk 1, 21-8-24, sd 1309 ft.

LAWRENCE COUNTY — Marguerite Dev. Co.'s Broadway 1, 31-17-1, sd 45 ft.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 31-12-31, TA 2941 ft. C. F. McDonald's Black 1, 12-13-28, arr set 6⅝ cas 2180 ft. Buck Oil Co.'s Taafe 1, 23-12-32, dr 2350 ft.

NEVADA COUNTY — Roy Davis et al's Henry et al 1, 10-12-20, rigged up wo.

OUACHITA COUNTY — Anderson et al's Buck 1, 7-15-17, hole cleaned, blocking acreage, td 2727 ft. Artex Oil Co.'s Smith 1, 31-15-17, TA 3188 ft. Magnolia Pet. Co.'s Grayson 2, 21-15-19, set 8⅛-inch cas 1478 ft, missed ds test in bro sand 2120-26 ft, cored sand 2126-34 ft, set 5¾-inch cas 2118 ft, td 2134 ft.

PIKE COUNTY—Theo. Davis, Tr.'s, Ruth Wilson 1, 25-5s-26w, sd 718 ft.

POPE COUNTY—Cosden Oil Co.'s Mo. Pac. R. R. 1, 13-9-19w, set 10-inch cas 2508 ft, fsh bailer 3780 ft. Ark. La. Pipe Line Co.'s Crotts 1, 16-9-21w, sp dr 310 ft.

SEBASTIAN COUNTY—M. W. Greesom's Spears 1, 9-7-29w, lcn. Lavaca O&G Co.'s Cason 3, 21-8-30, dk. Bradley 7, 28-8-30, dr shale 2318 ft; Southland 1, 28-8-30, set 8-inch cas 190 ft, dr 640 ft; J. O. Ingram 7, 22-8-30, dk. A. G. Williams, Jr.'s, Patterson 1, 27-8-30, lcn.

ST. FRANCIS COUNTY — Brownlee Oil Co.'s Whitted 1, 28-4-1, dr 2050 ft.

UNION COUNTY — Lion O&R Co.'s McDuffie 1, 32-19-16, dry abn td 4506 ft. H. L. Hunt's Pratt 6, 7-18-15, fsh for lin, td 2214 ft. Al-Cal Oil Corp.'s Haney 1, 1-18-16, sd wo 2770 ft. Malloy & Co.'s Robertson 3, 6-18-15, lcn; Goodwin 4, 36-17-16, set 6⅝ cas 2186 ft, 37 ft bro sand, sand pumping, td 2222 ft; Murphy 1, 1-18-16, rig up. Wisinger & Ball's Rodgers 1, 31-17-15, set 6⅝ cas 2170 ft, bailing to test 2221 ft. S. B. Hickman et al's Hogg 1, 35-16-17, rig up. Southern Crude Oil Purch. Co.'s Oliver 1, 11-18-13, rig up laying water line. Lion O. R. Co.'s Ballard 1, 10-18-13, cored sw sand 4051 ft. Johnson & Gummer's Cargile 1, 4-18-13, TA 3825 ft. J. W. Olvey's G. G. Simmons 1, 15-18-13, sp set 12½-inch cas 276 ft, dr 2100 ft. Federal Pet. Co.'s Tillman 1, 9-18-13, lcn. Marine Oil Co.'s Winn Est. B-2, 10-18-13, set 8¼-inch cas 3528 ft, flowing 4000 bbls fluid through 6-inch cas 92 per cent sw, td 3545 ft. Simms Oil Co.'s Simmons A-1, 10-18-13, set 8¼-inch cas 3520-31 ft, pumped 1400 bbls fluid first 24 hrs, 75 per cent sw, now making 2000 bbls fluid, 60 per cent bs and w, td 3532 ft; Simmons B-1, 10-18-13, washing to bottom 3331 ft; Simmons A-2, 10-18-13, lcn. Modisette Drilling Co.'s Union Sawmill 4, 14-18-14, lcn. H. L. Hunt, Inc.'s, Trammell 1, 28-18-12, bldg dk. Root Ref. Co.'s Jerry 2, 21-17-14, dk. Sunby et al's Perdue 2, 23-16-14, rig up.

WASHINGTON COUNTY — Taylor et al's Runny 1, 1-13n-29w, dk. Lincoln Lease Holding Co.'s Townsite 1, 30-15-32, sd 1500 ft. C. H. Willoughby's Jones 1, 34-16-30, sd 2150 ft. O'Hara & Shetterley's Boyd 1, 12-16-32, TA 850 ft. Delbert Graves' Cunningham 1, 14-15-32, sd in gray sand 602 ft.

WHITE COUNTY—Letona Synd.'s Letona 1, 35-9-8, set 5 3/16-inch cas 3500 ft, sd 3650 ft.

VAN BUREN COUNTY — J. S. Martin's Scanland 1, 5-9-13, sd 50 ft.

YELL COUNTY—T. Luckett's Balcon 1, 36-7n-21w, set 6⅝ cas 3650 ft, td 3710 ft.

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CLAIBORNE COUNTY—
Ben White's Old Hen 1, 26-10-4.... * 2004

ALCORN COUNTY — Alcorn Pet. Co.'s Matthews 1, 14-2-7, dk rebuilt after being pulled in while fsh for 12 joints 6-inch cas, preparing pull 6-inch cas to run 5 3/16-inch cas 2393 ft, td 2735 ft.

CHICKASAW COUNTY — Hightower & Golsan's Fleming 1, 20-13-3w, driving 8¼-inch through gravel and sand 1400 ft; Fleming 2, 15-13-2w, dk pat.

CLAIBORNE COUNTY—Ben White's Old Hen 1, 26-10-4, dry abn, td 2004 ft.

HINDS COUNTY (Jackson Dist) — Mrs. Ella Rawls Reeder's State Land 1, 25-6-1e, shot off and recovered some ds, 1900 ft of it still in hole, td 2905 ft. Jackson O&G Co.'s Mayes 1, 2-5-1e, supplying gas through separator for nearby test, td 2585 ft; Taylor 1, 35-6-1e, set 10-inch cas 797 ft, cored chalk showing sw 2616 ft, sd in sandy limestone and shells, repr rig 2747 ft. Central Cotton Oil Co. 1, 3-5-1e, dk. Louisiana G&F Co.'s Harris 1, 35-6-1e, set 10-inch cas 820 ft, topped midway shale 2396 ft, topped chalk 2506 ft, set 8⅝-inch cas 2506 ft, dr plug. Love O&G Co.'s Bridges & Hilzim 1, 36-6-1e, sp wo. Love Pet. Co.'s Mendoza 1, tested show gas through ds 2444 ft, set 6⅝ cas, topped midaway rock, td 2444 ft. Progressive O&G Co.'s Mayes 1, 2-5-1e, dk. Tri-State O&G Co.'s E. S. Wilson 1, 23-6-1e, dk up, wo tools. Dome O&G Co.'s Elton 1, 5-4-1e, dr gumbo and shale 767 ft. Magnolia State Oil Co.'s Brown 1, 19-6-1e, dk pat., (formerly carried as F. X. Gowans' Fee 1). Weir et al's Holliday & Ross 1, 8-6-2e, dk. Cane River O&G Co.'s Lufkin 1, 15-5-1e, dk.

KEMPER COUNTY (De Kalb Dist.)—W. W. Jones' Rosenbaum 1, lcn not given, dk.

LA FAYETTE COUNTY—F. E. West et al's May 1, 22-10-1w, rigged up wo.

LAUDERDALE COUNTY (Meridian Dist.) —Lauderdale O&G Co.'s Lackey 1, 2-7-16, set 8¼-inch cas 2790 ft, tested 20 fourbles sw and 120 ft white water after plug drilled, td 2816 ft, arr deepen. Meridian Nat. Gas Co.'s Mattie Houser 1, 33-8-18, sd in sandy shale, td 2826 ft. Boyd Hammond's Craig 1, 2-6-14, lcn abn will not drill.

MONROE COUNTY (Amory Dist.)—Amory Pet. Co.'s Hall 1, 8-13-17, set 8-inch cas 2293 ft, set 6-inch cas 2333 ft, recovering little oil from hole while bailing and co at 2412 ft after shooting 2408-12 ft, td old hole 3045 ft. Amory Dev. Co.'s Bourland 1, 2-13-19, sd in lime, bailer in hole, td 2912 ft. Park Bowser's Cowart 1, 2-12-19, wo with pipe driven to 85 ft.

RANKIN COUNTY (Jackson Dist.)—Gulf Ref. Co.'s Rainey 1, 13-5-1e, set 9-inch cas 2500 ft, tested 5 to 7 mil ft gas, much sw, show heavy oil 2520 ft, plugged back to 2500 ft, tested sw when plug, dr tested 300 ft water 2649 ft now losing returns, td 2649 ft. Interior Oil Co.'s Moore 1, 28-6-2e, dr 475 ft. Pearl River O&G Co.'s Littlefield 1, 12-5-1e, dk.

WARREN COUNTY (Vicksburg Dist.)— Henderson et al's Dornbusch 1, 8-18-15, sd wo with ds stuck in hole, td 2475 ft.

WEBSTER COUNTY — Cumberland Oil Co.'s Henley 1, 15-21-11, TA 1865 ft.

YALABOUSHA COUNTY (Water Valley Dist.)—J. D. Collette et al's Blackmer 1, 14-11-4w, topped red beds 2316 ft, bit recovered and 10-inch cas set 2200 ft, arr core, td 2427 ft.

ALABAMA

HOUSTON COUNTY—J. R. Sealey's Fee 1, 13-1n-27e, changing from cable tools to rotary, td 3100 ft.

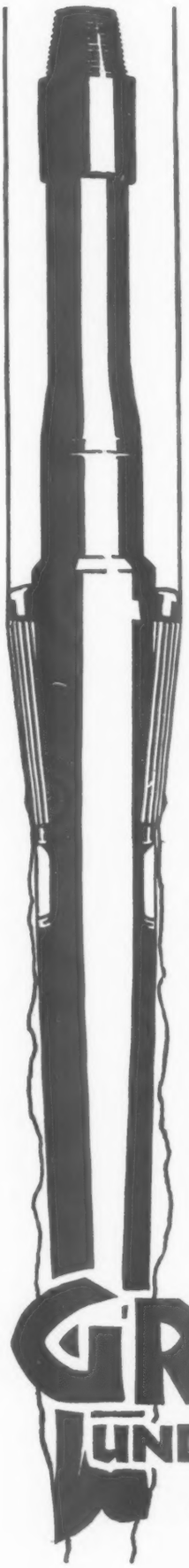
LAUDERDALE COUNTY — P. J. McAlpine's O'Neal Hrs. 1, 8-2s-13w, re-set 10-inch cas 169 ft after sr to 210 ft, dr blue limestone 745 ft.

MARION COUNTY—P. J. McAlpine's Clark 1, 22-11-14, dk pat.

MORGAN COUNTY—Albany-Decatur O&G Co.'s English 1, 6-6-4, fsh for cas, td 4130 ft.

SUMTER COUNTY—B. W. Bates' Fee 1, 3-18-1w, TA 1200 ft; Fee 2, 3-18-1w, rig up wo.

WASHINGTON COUNTY—Hobson et al's Wilson 1, 27-7-1w, arr resume dr in limey shale 881 ft; Hobson Bros. 1, 9-8-2w, sd 1450 ft. Oscar Brown's U. S. Land & Cotton 2, 25-3-2, last report dr 720 ft.



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Humble

Houston.—Among the new producing wells at Humble is Humble Oil & Refining Company's Williams 11 on the south flank, which came in April 21 flowing 350 barrels of oil daily, although it was not completed at that time.

There were two completions in the field during the past week. South Texas Petroluem Company's Burt 2 came in flowing 1800 barrels pipe line oil daily, 38.8 gravity at 70° temperature, with four joints of screen set at 4800 feet.

On the west side of the dome Houtex Production Company's O'Boyle 1 was abandoned at 4800 feet.

The more interesting tests at Humble are those now drilling on the west side of the dome, Sun Oil Company having opened deep production on that flank recently through completion of Bender 3 as an 1800-barrel well at 3903 feet. That company's Bender 4, located north of No. 3, was drilling late last week at 5040 feet in shale.

Rio Bravo Oil Company's Fee 1, located about 1250 feet southeast of Sun Oil Company's Bender 3 has encountered sand with oil show at 3873-3996 feet.

Lee & Wilson's Bender 1 on the west side of the field in Block 3 of the Bender Third Addition, was drilling late last week at 3045 feet in sand and pyrites.

P. G. Benedum's Foley 1 in the J. Ryan Survey was drilling gumbo and lime at 3710 feet.

Chicago.—Announcement is expected soon of the entrance of the United Light and Power Company into the natural gas field. This company, through its largest subsidiary, the American Light and Traction Company, has purchased substantial acreage in natural gas fields of Kansas, as well as various rights of way for pipe line extensions from the fields to the markets.

Development plans, it is understood, will call for the immediate extension of lines to serve Omaha and Lincoln, Nebraska; and the development may eventually lead to the extension of natural gas service to a widespread area including substantial portions of Kansas, Missouri and Iowa.

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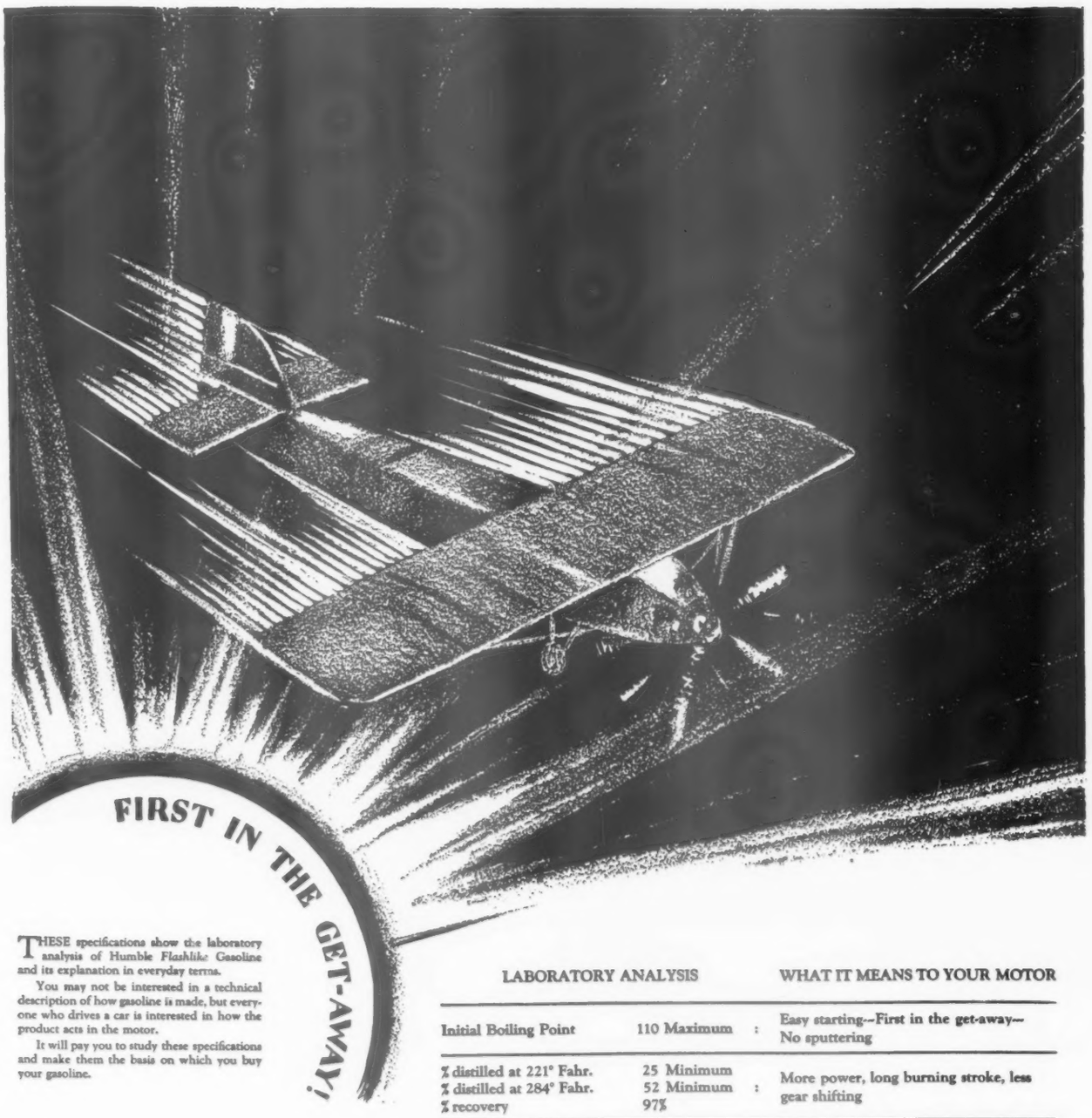

THESE specifications show the laboratory analysis of Humble *Flashlike* Gasoline and its explanation in everyday terms.

You may not be interested in a technical description of how gasoline is made, but everyone who drives a car is interested in how the product acts in the motor.

It will pay you to study these specifications and make them the basis on which you buy your gasoline.

HUMBLE FLASHLIKE GASOLINE

SPECIFICATIONS

LABORATORY ANALYSIS			WHAT IT MEANS TO YOUR MOTOR
Initial Boiling Point	110 Maximum	:	Easy starting—First in the get-away—No sputtering
% distilled at 221° Fahr. % distilled at 284° Fahr. % recovery	25 Minimum 52 Minimum 97%	:	More power, long burning stroke, less gear shifting
End Point	400	:	Complete vaporization—complete combustion
Doctor Test	OK	:	Clean odor—never offensive
Corrosion Test	OK	:	No choking or corrosion of gas line
Color	Plus 25	:	Highly refined, clean, and clear
Sulphur	less than 1/10 of 1% Max.	:	No pitting of valves, or fouling of oil
Gum Test	OK	:	No resinous precipitate to clog carburetor

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ANSWERS

to questions found on page 57

1. Because of altitude differences, atmospheric pressures range from one to three pounds less than the average at sea level. Thus it is not uncommon to have gas measured in locations where the atmospheric pressure is only 12 pounds per square inch absolute instead of 14.4 pounds, the accepted standard for one cubic foot.

2. The chance of pulling pipe, stuck for any cause, decreases quickly the first hour or so; for the longer the pipe sets in the hole without circulation or rotation, the harder it usually freezes on account of settling down in the hole.

3. The 70-mile, 10-inch pipe line built by Standard Oil Company of California at Estero Bay, about 10 miles northwest of San Luis Obispo—is the world's largest submarine oil line. It is the coast terminal from Kettleman Hills, and was completed in October, 1929.

4. In unit development, spread acreage in a given district is pooled or merged, each company or individual taking a corresponding interest in the resulting block in proportion to the amount of acreage donated; expenses and profits are shared equally. Thus a saving is effected through the elimination of a competitive drilling race.

5. Texas led all states in the United States in both 1928 and 1929.

6. Deep drilling was responsible for California's excess in 1929. Just as production began to decline, the O'Connell zone was discovered at 6200 feet; then before a peak was reached in the O'Connell, the remarkably productive Clarke sand was found at 8100 feet; and later in the year a lower Hathaway zone was found at 9000 feet.

7. Geophysics has made possible numerous productive oil fields in the Gulf Coast through the accurate location of salt domes.

8. The Federal Oil Conservation Board states that the producing and proven area of oil lands in the United States is in excess of 3,000,000 acres.

9. The evils of too close spacing of oil wells are chiefly economic. However there are in addition, losses of gas energy from the by-passing of gas where wells are too closely spaced. This results in in the lessening of the efficiency of expulsion of oil from reservoir sands by excessive friction. Another result is the high Jamin effect in an early stage due to the rapid drop in formation pressure.

10. Considering fields as a whole, ultimate production is probably not decreased. Deferred production is obtained within two or three years. In certain fields, however, as for instance in the San Joaquin Valley field in California, some of the properties on top of the structure suffered from drainage due to gravity, the gas pressure in those fields was very low, consequently the oil drained down the flanks of the structure by gravity. Again in the Torrence field, California, there is evidence that deferred production may never be obtained, especially in those fields where the gas is the prime production factor, and when adjacent properties continue to produce. All the evidence from all areas seems to point to the fact that any shut-down, to be effective, must be a cooperative action throughout the structure in order that maximum recovery is obtained, and too, in order to achieve fair shut-in production for the several operators.

Los Angeles. — Gas from wells drilled along the fringe of the Tulare Lake basin will be used for lifting water from irrigation wells, the practice to utilize much of the dry gas developed in the Dudley Ridge district. Experiments have shown the feasibility of gas lift in the type of water wells in use, a saving of 30 per cent having been made in competition with electric power.

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The weight of the load on a KM CO Steel Derrick does not follow a zig zag course, haphazardly down the derrick, but is met by solid leg strength, from the bottom up. The reason for this accurate distribution of weight in the KM CO Derrick is that each leg has a milled end which gives it full bearing on the leg below, distributing the load correctly from the crown block to the foundation. Gusset plates at all leg splices are of one piece, special quality flanging steel and inner splice are milled to fit the fillet of the derrick leg —insuring close-fitting, rigid construction. One size bolt for all connections. Legs are uniform and interchangeable. A. P. I. Specifications are followed in the design.

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MAYBE it's stubbornness, maybe it's just that they know a good thing when they've found it. The fact is that most of the oil workers stick to the TRIMO pipe wrench and don't want any other.

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Control Head and Oil Saver

OIL WELL IMPROVEMENTS COMPANY

Oil Well Improvements Company, Tulsa, has announced the new "All Purpose" control heads and oil savers, now ready for the market. These control heads, made up to and including nine-inch O.D., are oil tested to 3000 pounds pressure. The head embodies all of the features of all previous types of this company's control heads. Its general utility lies in the fact that it may be converted into either set screw, latch assembly, or lubricating in head by means of interchangeable top flanges. Extra bottom flanges are available for changing the thread or reducing the casing size. All heads from nine-inch O.D. down, have the same size oil saver seat, take the same size oil saver, and accommodate 10-inch chamber for lubricating tools. The operator may have any type, size or thread in control head construction from nine-inch down, by having only one control head body and oil saver, and by having the desired top and bottom flanges for changing the heads.

This head is of semi-steel construction, with two by-pass openings for relieving pressure, mudding off gas, steam line connection, or by-passing pressure to the lubricating chamber for running tools under pressure or heavy flow.

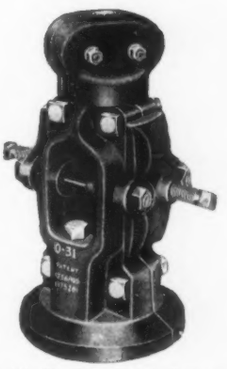
The shoulders on the by-pass openings provide anchor lugs for securing the head are to prevent the casing separating or the control head blowing off.

The head is sold complete with bottom threaded to casing sizes and the thread desired, and with either set screw or latch assembly top flange. The lubricating-in flange is available for the attachment to set screw top flange for converting it to a lubricating-in head similar to the Type "X" head for running tools under pressure or heavy flow.

The "All-Purpose" oil saver is especially made for use in the

All Purpose Control Head

All Purpose Stuffing Box



All Purpose Oil Saver

"All Purpose" control head. It has a special swivel roller to accommodate the pull of a drilling line. Two sets of packing rubbers cross pack on the drilling line. The followers, side plates, body bolts, and other parts are over size to protect against high pressure.

The "All Purpose" stuffing box for closing the top of the lubricating chamber is similar to the Type "X" stuffing box used with Type "X" lubricating head. It is to be used with 10-inch casing and one-inch drilling line. Special boxes for larger are available if required.

The fittings for by-passing pressure to the lubricating chamber as shown in an accompanying illustration are not furnished by the manufacturer. Standard lease fittings are used.

Steel Welding Rod

OXWELD ACETYLENE COMPANY

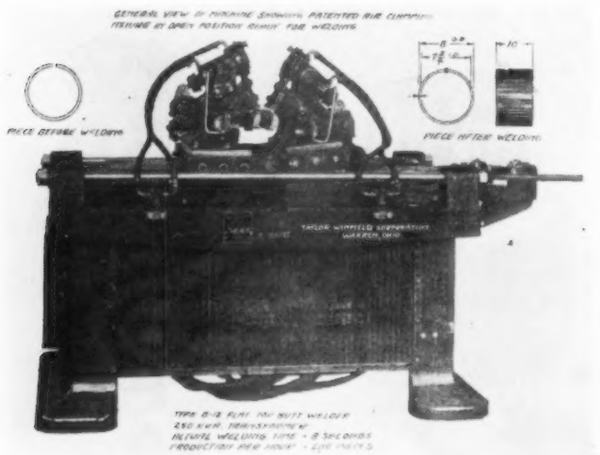
Oxweld Acetylene Company, 30 East 42nd Street, New York City, has placed on the market a welding rod for making welds in steel, designated Oxweld No. 22 S.D. (strength and ductility) steel welding rod. This rod has been especially developed for joints in steel pipe having a carbon content of 0.30 to 0.40 per cent, which has recently come into use. In general appearance, weldability, chemical and physical properities No. 22 S.D. is similar to Oxweld No. 1 high test rod, but is made to produce welds of higher tensile strength.

Oxweld No. 1 high test rod is made to produce welds having the full strength of the base metal in regular low-carbon steel and steel containing less than 0.30 per cent carbon. For full-strength welds in 0.30 to 0.40 carbon steel, Oxweld No. 22 S.D. steel rod is recommended by the company. Several coupons cut from special-analysis, high-strength plate that had been welded with a single-vee weld using No. 22 S.D. rod showed tensile strengths of 100,000 pounds per square inch.

The action of No. 22 S.D. rod under the welding flame is similar to that of No. 1 high test rod. No. 22 S.D. welding rod is a self-fluxing deoxidizing rod. It forms a fusible slag that rises to the surface where it serves as a protective coating which, although extremely thin, protects the surface of the molten bath from the oxygen of the air and thus prevents oxidation. The composition of this rod prevents the strengthening element, carbon, from burning out during the welding

operation. It fuses into the base metal at both the sides and the bottom of the vee.

This welding rod is available in 3/16-inch and ¼-inch diameters in 36-inch lengths.



Coupling Welding Machine

TAYLOR-WINFIELD CORPORATION

Taylor-Winfield Corporation, Warren, Ohio, manufacturers of electrical resistance welding machinery, has recently placed on the market a machine which is designed for welding pipe couplings such as are used in an oil well line and casing and which ordinarily are forged.

With this process a flat piece of iron is rolled up into the form of a ring, placed in the machine and within a few seconds is welded together. The welded product is then used as is the solid forging.

The machine welds at the rate of 100 to 175 couplings per hour, being clamped automatically by air cylinders. The flashing and upsetting of the weld is accomplished either by a hand operated machine or by a mechanically operated machine where the element of time and duration of heat together with upsetting pressure are all governed automatically by the mechanical action of the cam and motor driven machine.

New Electrode

LINCOLN ELECTRIC COMPANY

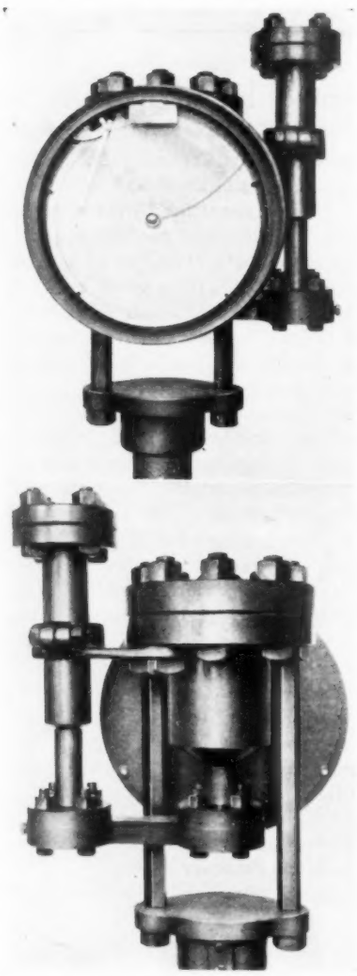
Lincoln Electric Company, Cleveland, announces a new electrode to be used for welding, the commonly called "18-8 stainless steels," which will be known as "Stainweld A." This electrode makes possible welds of the same chemical content of the stainless steel itself of dense ductility. This welding is done in a protected atmosphere to exclude the oxygen and to eliminate oxidation of the weld metal.

The rod is of the same chemical composition as the metal and is coated with a material which in the intense heat of welding forms a gaseous envelope around the arc. It is used with reversed polarity to permit the making of a weld that is as impervious to corrosion as the metal it joins.

"Stainweld A" is obtainable in three sizes, one-eighth-inch, five-thirty-seconds-inch and three-sixteenths-inch, of the regulation 14-inch lengths, and may be used for horizontal, vertical or overhead welding.

New Flow Meter

FOXBORO COMPANY



Front and rear view of Foxboro Flow Meter

Foxboro Company has developed a new flow meter to stand a working pressure from nothing to 5000 pounds per square inch. It has been built for measuring the flow of gas, air, steam, hot oil and gasoline.

While retaining all the features that have made Foxboro orifice meters so well known, the pressure chambers of this new meter have been so constructed as to meet the higher pressures with absolute safety. A glance at the accompanying illustration shows the sturdy construction of this meter. All working parts subjected to pressure are drop forgings, and every part is specially designed for high pressure work.

All known errors and variables have been eliminated, and the new meter has no unknown quantities and no inherent defects. It is calibrated to read and record in terms of flow and may be equipped with an integrator that reads direct without multipliers the total flow in gallons or feet or pounds.

The combination of four great factors — accurate coefficients, a differential measuring device that is inherently accurate, an integrator that can be depended upon, and pressure chambers that will meet any commercial condition — results in a high pressure meter of simplicity and accuracy.

Laying a 14" Naylor Pipe line in uniform 40 foot lengths.

Saving $506.88 Per Mile In Laying Costs ....With Naylor Pipe

THIS saving was made by a large oil company on a 12" Naylor Pipe line, Victaulic coupled. The laying costs of the whole line totalled only $100.32 per mile.

A similar 12" line of standard weight pipe, 18 to 22 foot random lengths, had cost this same company $607.20 per mile to lay. $506.88 *more than Naylor Pipe had cost them.*

Naylor Pipe assures lower laying costs because of its light weight. It weighs one half as much as standard weight wrought pipe. Light weight pipe speeds up laying because it is so much easier to handle in the field. And ease of handling requires fewer men on the job. Less labor means lower costs.

As to the other economies of Naylor Pipe: When the total costs on the two lines were finally compared (from freight to "as laid in the ground") the results *showed a net saving of $2064.74 per mile on Naylor Pipe.*

The light weight of Naylor Pipe which is responsible for these economies is due to a spiralwelded lock-seam truss which provides maximum structural strength with minimum weight.

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Maximum Structural Strength Mo-lyb-den-um With Minimum Weight

IRON

Standardized Naylor Pipe is made in sizes 6" to 12" I. D. and 14" to 20" O. D. in any uniform length desired up to 40' 0". Ends made to wrought pipe standards for all types of coupling.

Where corrosion is not a problem, Naylor Pipe can be furnished in steel.

Toncan Copper Molybdenum Iron is a development of Central Alloy Steel Corporation, the world's largest and most highly specialized alloy steel producers. It possesses a superior corrosion resistance, making it the favored pipe material.

NEW EQUIPMENT FOR THE FIELD

Taylor Casing Spider open

Taylor Safety Casing Spider

OKLAHOMA IRON WORKS

Oklahoma Iron Works, Tulsa, has perfected the Taylor safety casing spider, which is distributed by International Supply Company. It is an automatic spider designed to handle the longest strings of casing. The body of the spider is a one-piece box type steel casting. The slips are also made of cast steel and are cored and ribbed for reducing unnecessary weight to the minimum.

An accompanying illustration shows the complete spider with the slips in a closed or gripping position. The operating mechanism is housed within the body of the spider. This arrangement has eliminated obstructions above the slips, allowing the elevator to be lowered on top of the slips without danger to the operator or damage to the mechanism. The slips are heat treated and hardened, and are beveled at the top and bottom to prevent the coupling hanging on the slips while the casing is being raised or lowered.

Another illustration here shows the slips in a raised position and the cover plate removed to show the lever mechanism employed in raising and lowering the slips. The slips are each held in contact with the bowl of the spider by means of dovetail keys. To change the slips, it is necessary only to remove the two pins attaching the lifting arms to the slips.

Weight of the spider complete, with one set of slips, is 2580 pounds. The size is 10-inch, accommodating slips ranging in size from 10¾-inch down to 4¾-inch.

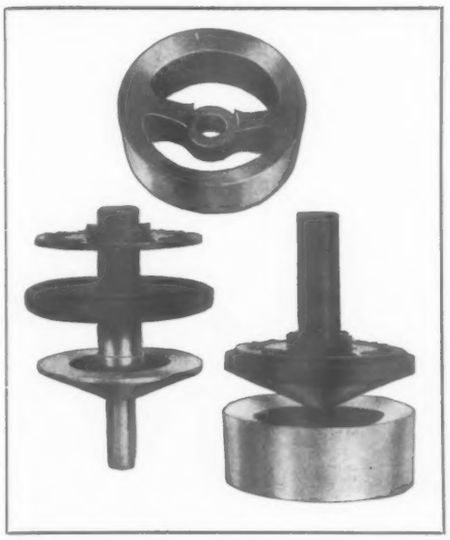
Taylor Casing Spider closed

Ring Test Machine

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

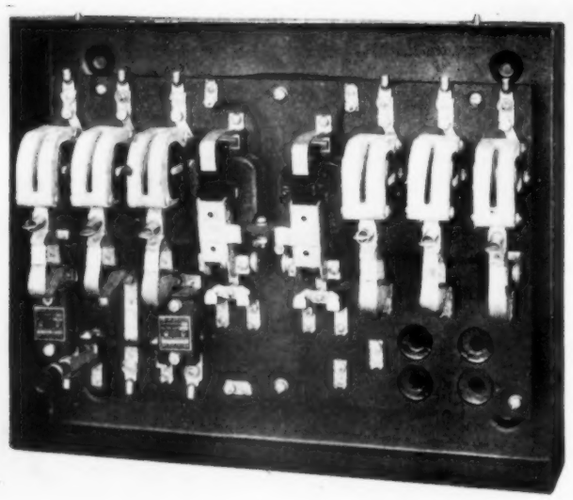
The above illustration shows how the Westinghouse Electric & Manufacturing Company's electric motor oil ring test machine is glass enclosed to prevent spattering. The research laboratories of the company are carrying on this work as part of the first scientific investigation to determine the most effective size, shape and weight of oil rings for maximum lubrication.

Corona Silica, Inc., Rogers, Arkansas, has announced the appointment of the Beaumont Cement Sales Company, Beaumont, Texas, as distributors in the Gulf Coast territory of "Opalite" and other Corona Silica, Inc. products. Stocks of "Opalite" are being placed at the distributor's Beaumont warehouse, Railroad Avenue and Forsythe Street, and at the Houston Terminal Warehouse, Houston. Stocks will be placed in the future at other central points where demands for this new product for treating drilling mud are created. The Mid-Continent distributor recently appointed to handle Corona Silica, Inc., products is the Opalite Sales Company of Cushing, Oklahoma.



Other manufacturers realize why "There are more MacClatchie Valves sold than any other make on the market"

THERE are several mud pump valves on the market that resemble the MacClatchie. Some of them appear to be outright imitations of the original valve which was pioneered by this company. The companies marketing these imitations know why the MacClatchie is more popular with the field man than any other make. They realize that its efficiency . . . its simplicity of construction and its long life make it the ideal valve for any make or size of mud pump. The wonderful market for such a valve is evident to these other manufacturers, who know their markets. Purchasers may now be assured, however, that they can safely standardize on the original MacClatchie without fear of having trouble in getting replacements. Several U. S. patent applications will soon mature to definitely discourage imitations and to forbid further activity on the part of infringers. MacClatchie Manufacturing Company, Oilfield Specialties —Aviation Engines, Compton, California.



General Electric Magnetic Switch

Magnetic Switch

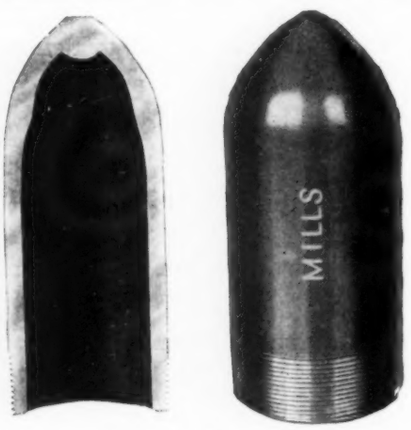
GENERAL ELECTRIC COMPANY

General Electric Company has announced a new enclosed, magnetic, reversing switch, the purpose of which is to control motors of greater horsepower than those controlled by the superseded type. This switch, designated CR-7009-B-18, supersedes the CR-7009-5 switch of the same type.

The new device is designed to throw small alternating-current motors directly across the line. It consists of two triple-pole, mechanically interlocked, magnetically operated contactors with restricted-type blowouts, and with a normally-open interlock on each contactor. It also has two hand-reset temperature overload relays. The contactors are mounted side by side on a molded base, instead of back to back as in the previous design. The device, which is illustrated here, is contained in a drawn-shell steel enclosing case.

Maximum horsepower ratings of the new switch are as follows:

Volts	3- & 2-phase 3- or 4-wire	Single-phase
110	7½	3
220	15	7½
440	15	10
550	15	10
600	15	10



Patent Pending

Ask for MILLS SOLID FORGED SEAMLESS STEEL BULL PLUGS

There's a reason: They last longer and cost no more than other bull plugs. Mills Bull Plugs are solid forged from New Seamless steel pipe, uniform, carefully threaded, reamed and bevelled. Certified laboratory cold water test to 6500 lbs.

Ask Your Texas Supply Store

MILLS IRON WORKS, Inc.

LOS ANGELES, CAL.

Texas Office: Second National Bank Bldg., Houston

PAUL "Skeeter" REID, *Manager*

Welding Rod

FUSION WELDING CORPORATION

Fusion Welding Corporation, 103rd Street and Torrence Avenue, Chicago, has developed a new welding rod, Weldite C-No. 6 Fluxed, a rod designed for carbon arc welding and particularly adaptable for the welding of mild steel plates and castings. Welding speed is substantially increased as well as the strength and ductility of the deposit through this development. The deposit is more readily machinable than deposits made with the usual filler rod used formerly by the company.

The influence of the flux coating, causing the arc to pull from the hottest part of the weld puddle rather than jumping to the colder edges offers more ease of manipulation of the arc.

The manufacturers state that this rod is particularly adapted to foundry work due to the ductile qualities of the deposit.

Further details on this rod, and samples, may be obtained by writing the company at the above address.

Fusion Welding Corporation has recently issued a bulletin devoted to describing the Weldite line of welding rods for various lines of work. This bulletin, containing a general line of information about different types of welding jobs, is also available upon request.

New Neilan Steam Line

NEILAN, SCHUMACHER & COMPANY

Neilan, Schumacher & Company, Los Angeles, manufacturers and distributors of engineering specialties, announce that final plans are being made for national distribution of the advanced Neilan steam control equipment which they manufacture.

New features of Neilan steam regulators include such improvements as non-corrosive stainless steel valve stems and other parts, ball bearings, nickel-iron and chrome-alloy steel body castings, and the improved "seatringuide" valve to reduce wire-drawing.

Neilan steam line products include pump governors, reducing valves, auxiliary pilot operated float valves, steam traps and air traps and many other items. More specific information regarding these products may be obtained by addressing the company at 641 Santa Fe avenue, Los Angeles.

GET BETTER RESULTS

With a LARKIN REGULAR BOTTOM!

REGULAR BOTTOM

In the Larkin Regular Bottom, the legs are short—allowing the pump to rest as near the bottom of the hole as possible and still obtain the necessary suction to remove the greatest amount of sand and sediment quickly.

Under ordinary sand conditions, the quick, sure, safe way to get better pumping results is to use The LARKIN Improved Sand Pump — equipped with the Regular Bottom.

Like the LARKIN Pump, the LARKIN Regular and Bit Bottoms are the result of many years experience in the manufacture of sand pumping equipment. Drillers everywhere know that LARKIN equipment will do the job—and do it right.

The LARKIN is built to clean out more wells, for more years, than any sand pump made.

Sold by Leading Supply Stores: Send for circular and price list.

BIT BOTTOM

This bottom is used for drilling and breaking the sand loose. Its chisel-shaped design is unique, prevents sticking, and allows successful operation in tightly packed sands.

Made only by

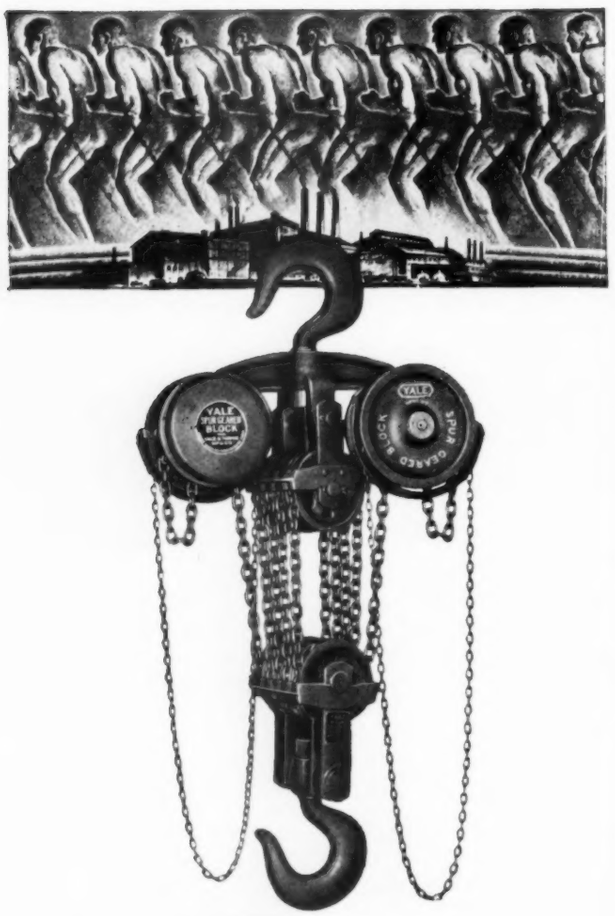
LARKIN & CO.

AT BUTLER, PA.

Makers of the LARKIN Line of Supplies

The LARKIN *Improved SAND PUMP*

TRADE **YALE** MARK



10 Giants

DO NOT POSSESS

the lifting power of one 20-Ton Yale Ball-Bearing Spur-Geared Chain Block.

Yale Ball-Bearing Spur-Geared Chain Blocks represent the highest development of the industry. Nothing is spared in materials, workmanship, inspection and test to give the easiest, safest, fastest lifting of loads by hand. Whether loads average 500 pounds or twenty tons, Yale makes the hoist best suited to the needs.

THE YALE & TOWNE MFG. CO., STAMFORD, CONN., U. S. A.
Canadian Branch at St. Catharines, Ontario

YALE **Hoisting and Conveying Systems**
YALE MARKED IS YALE MADE

Your Drilling Dollars Will Have More Cents

WASHINGTON DERRICKS

—when invested in Washington Structural Steel Derricks. The buyer who takes into consideration the length and character of service rendered, gets not only his dollar's worth, but also an extra dividend in thorough satisfaction. Many such buyers see that their drilling equipment includes Washington Steel Derricks because they know they'll get a dollar's worth for every dollar they spend. Some of our derricks have already drilled more than 25 wells and are still on the job. Washington Steel Derricks represent investments in indefinite use and practical indestructibility.

Why Experiment? Washington Derricks Will Drill Your Wells and Pull the Casing.

O'BRIEN Steel Construction Company
Washington, Penna.

Western Representative:
Rig Equipment Co.,
1524 So. St. Louis St
Tulsa, Okla.

WASHINGTON STRUCTURAL STEEL DERRICKS

TYLER BOILER TUBES

O. H. Steel Boiler Tubes
Armco Ingot Iron Boiler Tubes
Cop-R-Loy Boiler Tubes

Request full details

THE TYLER TUBE & PIPE CO.
WASHINGTON, PA.

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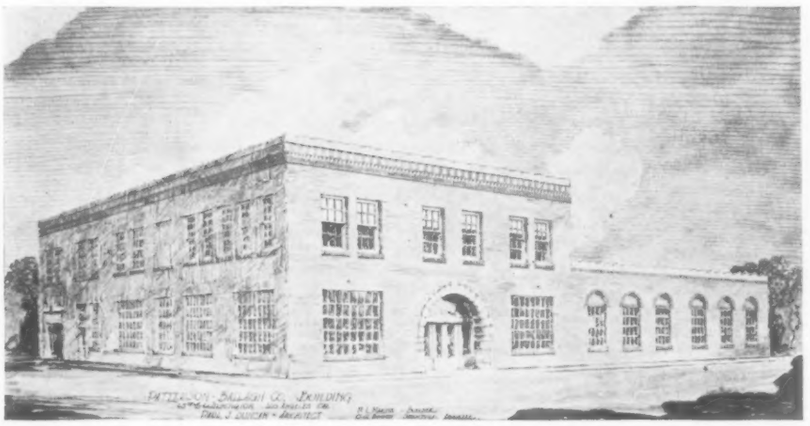
Harrisburg Supply Company, Tulsa, Oklahoma
A. M. Castle & Co., Chicago, Seattle, Washington; San Francisco, Calif.; Los Angeles, Calif.
Lukens Steel Company, New Orleans, La.

ARMCO IRON LINE PIPE and OIL WELL TUBING

Manufacturer and Supply Dealer Notes



New Patterson-Ballagh Plant

New Patterson-Ballagh Plant

Los Angeles.—Erection of a $250,000 addition to the present Patterson-Ballagh factory in Los Angeles is now under way to provide increased facilities for the manufacture of Bettis protectors, drill stabilizers and other industrial rubber products used in the oil fields.

The new factory will have three times the area of the present factory and part of it will be two stories in height. It is being constructed at 65th and Wilmington Streets, adjacent to the present factory, and will be completed in about 30 days, according to Jack C. Ballagh, secretary.

Patterson-Ballagh Corporation was formed about two years ago to begin manufacture of Bettis protectors and the new plant is a result of the continued increase on the part of companies in adopting rubber protectors as standard equipment. More than 300,000 Bettis protectors were manufactured in the present factory.

The new facilities will permit the use of progressive manufacturing methods so that the rubber can be handled from one department to another with a minimum of labor costs and assure more efficient routing. New equipment has been ordered and will arrive in Los Angeles within 30 days so that the present output can be doubled.

New testing equipment is also being added to the laboratory facilities, and machinery for the packing of protectors in special containers for overseas and tropic shipments is also being installed.

The Company not only manufactures protectors but a line of slush pump piston rubbers, valve rubbers and special moldings for blowout devices, etc.

Walworth Company, 60 East 42nd Street, New York City, announces the establishment of a new sales office in Houston, under the management of W. C. Goza, who was formerly the company's western division sales manager with headquarters at Kewanee, Illinois. He will work in connection with the distributors of Walworth products in the Southwest. The routine work of making quotations, handling orders and correspondence concerning oil country business will continue to be done at Kewanee under Goza's direction. He is succeeded as sales manager of the Western division by Charles W. Watson, excepting Oklahoma and Texas. The latter's office will be at 231 South LaSalle Street, Chicago.

At the annual shareholders meeting of Timken Roller Bearing Company on April 15, directors elected were H. H. Timken, J. G. Obermier, M. T. Lothrop, J. W. Spray, Henry H. Timken, Jr., of Canton; W. R. Timken of New York and A. C. Ernest of Cleveland. Officers elected at the directors meeting were H. H. Timken, chairman; M. T. Lothrop, president; W. R. Timken, J. G. Obermier, J. W. Spray, H. J. Porter, T. V. Buckwalter, L. M. Klinedinst, vice-presidents; R. C. Brower, secretary-treasurer; J. A. Riley, assistant treasurer; F. F. Tudor, assistant secretary.

Formation of the Republic Research Corporation with the filing of incorporation papers at Columbus, Ohio, marks another step in the new Republic Steel Corporation organization. F. J. Griffiths, former board chairman of Central Alloy Steel Corporation, will head the new research unit as president. Headquarters will be made at Massillon, Ohio, where facilities for steel research already exist which will be materially enlarged.

Chain Belt Company of Milwaukee, Wisconsin, has moved its New York office from 50 Church Street, New York City, into the Chrysler building, increasing the amount of space approximately 30 per cent. The New York office handles the line of Rex conveyors, Rex chain and transmission, Rex traveling water screens and Rex construction equipment and the line of Stearns Conveyor Company of Cleveland, manufacturers of belt conveyors and bulk material storage systems. The latter company is a division of Chain Belt Company. W. H. Quinn is New York district manager.

Interior view of the shop of Kinzbach Tool Company, Sawyer and Winter Streets, Houston, which has recently doubled its capacity for manufacturing whipstocks, milling tools, tank gauges, flanges and other specialties. Products of this company, of which Frank Kinzbach is the operating head, are distributed by Harrisburg Pipe and Pipe Bending Company of Texas.

Manufacturer and Supply Dealer Notes

J. L. JOHNSTON

J. L. Johnston is president of Johnston Brothers Valve Company, 601 West Building, Houston, manufacturers and distributors of the Johnston trip valve for tubing wells under pressure. The company maintains offices, aside from the headquarters location, at 618 Lake Street, Shreveport, and in the Exchange Bank Building, El Dorado, Arkansas.

Johnston entered the oil business as a roughneck in Spindle Top field, in 1909. For eight years, prior to 1925, he was connected with Crown Central Petroleum Corporation as driller and later drilling foreman in the Laredo, Texas, district. Since 1925, until the formation of his present company, he was field superintendent for Arkansas Drilling Company, El Dorado and Smackover, Arkansas.

J. G. BENEDICT

J. G. Benedict, treasurer and general manager of the Landis Machine Company, Waynesboro, Pennsylvania, was elected president of the National Metal Trades Association at the occasion of the association's annual meeting recently held in New York City. Mr. Benedict's industrial career began in 1900 with the Landis Tool Company. Later he joined the organization of the Fred Frick Clock Company, Waynesboro, as secretary, shortly afterwards going to Minneapolis as branch manager for Geiser Manufacturing Company, also of Waynesboro; after two years he returned to Landis Machine Company, which connection he has retained to the present. In addition to his business connections, he is a member of the American Society of Mechanical Engineers.

FRANK MASON

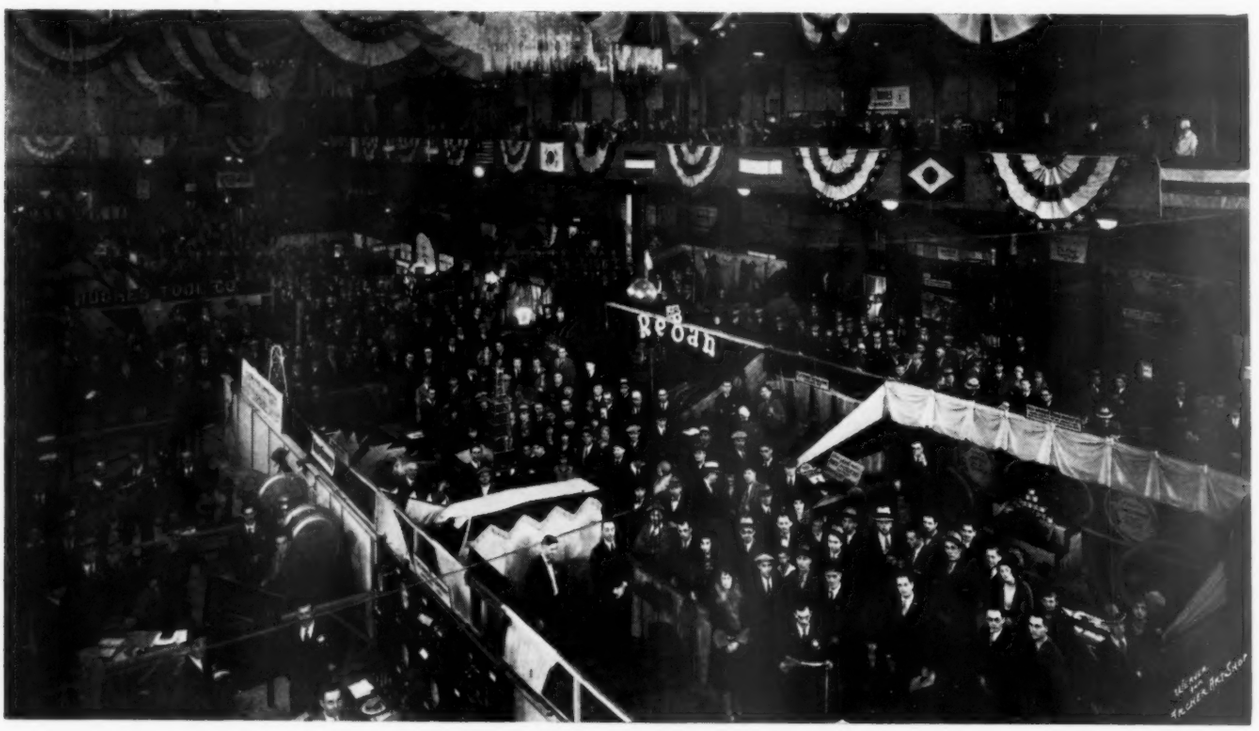
MASON JOINS SHAFFER SALES FORCE

Frank Mason, who for the past seven years has been factory representative of Shaffer Tool Works, Brea, California, has joined the sales staff of that company. He is covering the Mid-Continent fields and is located at the headquarters of the Fluid Packed Pump, Tulsa, distributors of the Shaffer line of products. Temporarily he is at the Wells-Roberts Hotel, Oklahoma City.

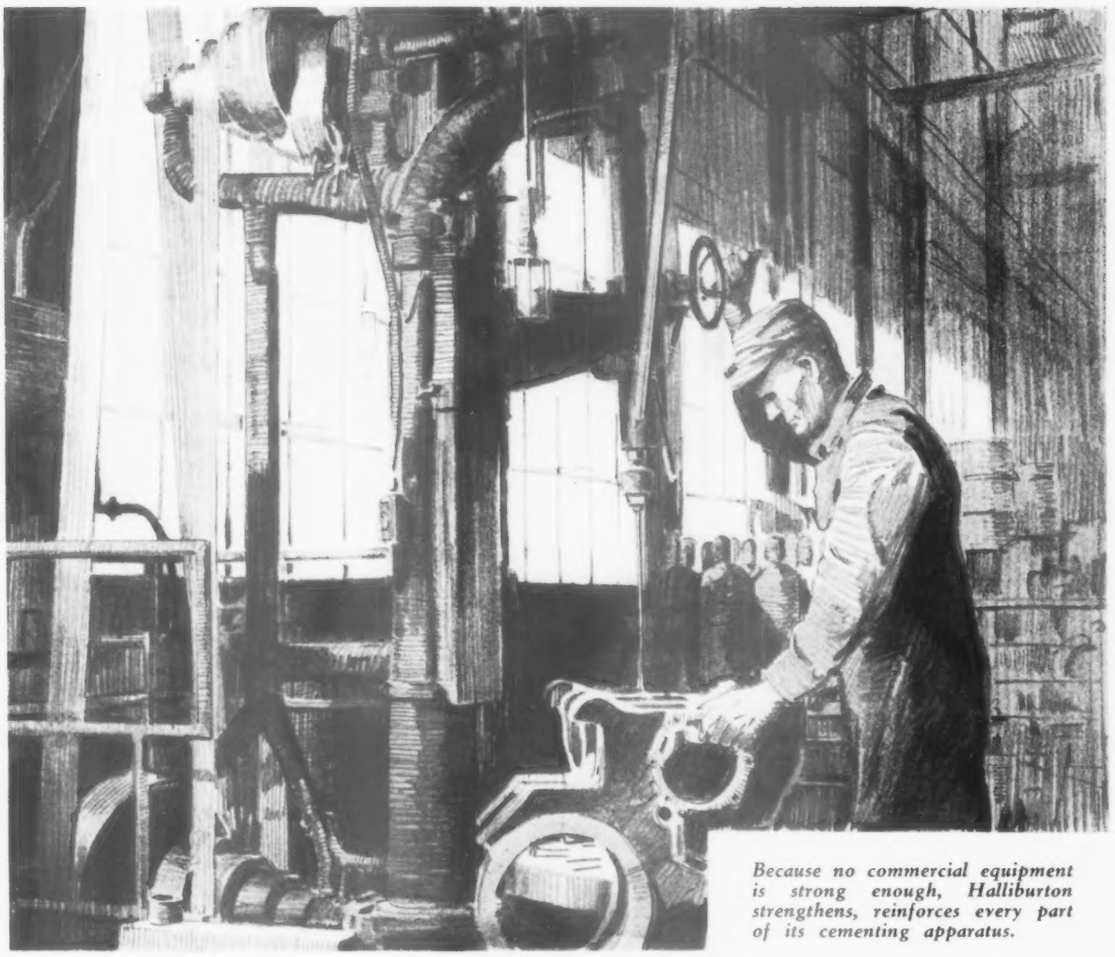
J. W. DES CHAMPS

J. W. Des Champs sailed from New York April 18 for Buenos Aires, Argentina, to open the Argentina office of Lucey Products Corporation.

B. F. Barnett is now acting manager of the Houston office of Goulds Pumps, Inc., 1902 Second National Bank Building, succeeding the late E. G. Goddard. Following Goddard's death recently, the office has been temporarily in charge of H. G. Garnsey, who came to Houston from the factory at Seneca Falls, New York.



Photograph showing major portion of first floor at Oil Equipment & Engineering Exposition, Los Angeles, March 16 to 23, 1930. Photo does not show exhibits on lower floor



Because no commercial equipment is strong enough, Halliburton strengthens, reinforces every part of its cementing apparatus.

The equipment Halliburton uses is very efficient—the process so far advanced that no other even approaches it; and yet our greatest asset is not equipment, not methods, but a treasure that neither money nor ingenuity can buy—EXPERIENCE. Each of the 40,000 wells that we have cemented was, of course a little different from its predecessor. Each contributes its share to the vast storehouse of cementing knowledge, and so helps to assure you of a safe, efficient and dependable job.

THE CEMENTER is an informative little publication, issued periodically, which will be sent to you as issued—without cost or obligation—on receipt of the coupon.

Halliburton Oil Well Cementing Co.,
Dept. OW, Duncan, Okla.
Without cost or obligation, please place my name on the list to receive THE CEMENTER regularly as issued.

Name .....

Company .....

Address .....

HALLIBURTON

OIL WELL CEMENTING CO.

Duncan, Oklahoma

SQUEAKS FROM THE BULL WHEEL

Mary—"It says here in the paper that the Marines have landed and have the situation well in hand. What does that mean?"

Gracie—"Gee, ain't you ever been out with a Marine?"

Old Judge Simmons of New Orleans lost a good sized purse on account of a "kitten's whisker" finish between his fine black mare and a horse that had come down there from Maryland.

When the judges gave the race to the Maryland horse, Judge Simmons turned to me and said, in a faltering voice: "My goodness, boy, I'm so unlucky that if I were Lazarus dead in the tomb and the voice of the Lord said, 'Lazarus, come forth,' I would come fifth."

A business man was involved in a legal trial. On the date set for the verdict, he found it necessary to leave town, but left instruction with his lawyer to wire him as soon as the verdict was rendered.

The verdict was duly rendered, and the lawyer wired as follows: "Justice has been rendered at last."

When the business man read the telegram, he wired right back: "Start proceedings to appeal the case."

A youth had been taking treatments at a hospital. In spite of the tonic the doctor had given him, the youth had appeared to be getting weaker with each visit.

"Are you sure you have been taking the medicine regularly?" the doctor asked.

"Yes, doc., every four hours, like it says on the bottle."

"Well, that's most surprising that you don't respond to treatment," said the doctor. "Thousands of my patients have been built up by this tonic, and I never knew it to fail before. What is your business? Maybe that has something to do with it."

"I'm an automobile salesman," said the sick man.

"Great heavens, why didn't you say so?" cried the doctor. "No wonder you're getting weaker day by day. Here's a dollar. Go out and get something to eat."

Inspector—Got away, has he? Did you guard all the exits?

Country Constable—Yes, but we think he must have left by one of the entrances.

Gauger: **Pretty good treatment, eh? What are you using?**
Old Kon: **Common sense, human kindness an' Kontol. A feller can't go far wrong with any of 'em.**

THE KONTOL CO.
10th Floor Santa Fe Bldg., Dallas, Texas

KONTOL

For the Treatment of Oil Emulsions

"I LIK-A TO BE AN OIL MAN"

I teenk I lika be an oil man,
He have da bully time,
He rida in da Pullman car,
Hess seegars cost a dime;
He leffa at da best hotel,
On da European Plan;
Nine dollars week ees all a barber get,
I lika be an oil man.

I teenk I lika be an oil man,
He geta da glada hand;
He knowa all do conductaine,
Every brakeman een da lan;
He go to show most every night,
An' seea da besta play;
He charge it enn expense account,
An his compana send da pay.

I teenk I lika be an oil man,
And scout da beega well;
Drinka da cocktail at da bar,
An eeta all time maccaroni my fill;
Playa da pool, billiards, too;
Be a basa ball fan;
I'd maka da dam big noise,
Eef I was an oil man.

I teenk I lika be an oil man,
Weeth a Sweetheart een each place;
An automobile or a Ford car,
You bet I seta da pace;
A beega diamond in my shirt,
A beegar one on my hand;
You teenk 't was something doing,
Eef I was an oil man.

I teenk I lika be an oil man,
And wear some Panama hat,
An' smoke a fine calabash,
Or some such ting lika dat;
I go to work at seex o'clock,
But I lika not this plan;
So I geta busy right way,
An' be an oil man.

SECOND ACT

I got a da job as oil SCOUT,
I no lika heem vera well;
I get up at five o'clock,
And work late as hell.
I teenk I gotta da bum job,
And I wisha I was dead,
De boss he write me a note,
And dees is what he said:

"We receiva your expense account,
And we teenk your flying high;
We notice all de cocktails,
But your territory's dry;
We want lot of dope on the wells,
So get busy, sawa wood."
And now he telegraph,
"Come in, you sucker; your'e no good."

—Author Unknown.

SKILLED SUPERVISION GUARANTEES THE QUALITY OF GULF PRODUCTS

COASTAL AND PARAFFINE CRUDES
GASOLINE — LUBRICATING OILS
NAPHTHA — GAS — OILS
WAX — PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

GULF REFINING COMPANY

General Sales Offices

PITTSBURGH, PA.

District Sales Office

New York Boston Philadelphia Louisville Atlanta Houston New Orleans

Ocean Terminals

Boston (Beverly), Mass.
Providence, R. I.
New York Harbor (Bayonne, N. J.)
Jacksonville, Fla.
Port Tampa, Fla.
Mobile (Magazine Point, Ala.)
Philadelphia (Girard Point, Pa.)
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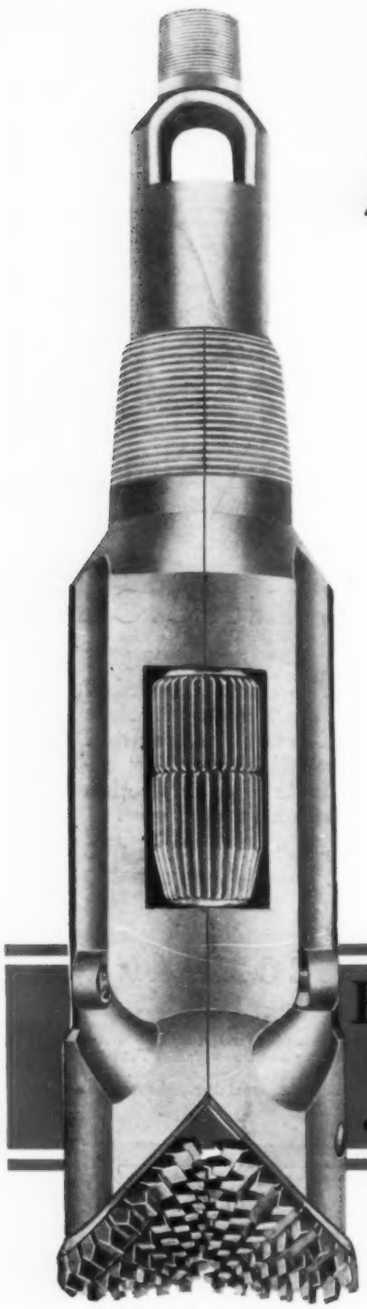

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